DOCUMENT RESUME

ED 172 722 HE 011 589

AUTHOR McBride, Jack G.
TITLE Post Secondary Education through Telecommunications. Final Report of Twelve CY 1974 Work Assignments to the National Institute of Education.
INSTITUTION Nebraska Univ., Lincoln. State Univ. of Nebraska.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE [75]
GRANT OEG-0-72-0457
NOTE 706p.

EDRS PRICE MF04/PC29 Plus Postage.
DESCRIPTORS Administrative Organization; Budgeting; *Consortia; Costs; Course Content; Course Evaluation; *Curriculum Development; Educational Finance; *External Degree Programs; Financial Support; Instructional Materials; *Multimedia Instruction; *Open Education; *Regional Programs; Resource Centers; State Universities
IDENTIFIERS *Nontraditional Education; State University of Nebraska; *University of Mid America NE

ABSTRACT

Described are the investigatory procedures, research and development, and achievements and conclusions for each of 12 work assignments for the 13-month period from January 1, 1974 through January 31, 1975 relating to the University of Mid-America (UMA). UMA is a regional consortium, comprised of the University of Kansas, Kansas State University, Iowa State University, the University of Missouri, and the University of Nebraska. The projects were in the areas of: curriculum planning for open learning; alternative approaches to courseware development: costs and procedures; cost analysis and comparison; a five-year plan of operations and a five-year expenditure and income projection; administrative structures and plans for the State University of Nebraska; a prototype resource center and operational plans for a series of intrastate resource centers; evaluation and acquisition of existing courseware, and adaptation to the State University of Nebraska's needs; broadcast and other open-learning delivery systems; a plan to broaden the open-learning fiscal base to include private and other public sources; course development of two working prototype open-learning multimedia courses; planning for systematic development and evaluation of eight additional courses; and formative and summative evaluation of the open-learning courseware and delivery system. A variety of appendices constitute more than half of the document. (MSE)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: HE | IR

In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

SUN

STATE UNIVERSITY OF NEBRASKA

ED117222

Post Secondary Education Through Telecommunications

Grant #OEG-O-72-0457

Revision #12

Final Report of Twelve CY 1974 Work Assignments

to the

National Institute of Education

HE 011 589

UNIVERSITY OF NEBRASKA
Lincoln, Nebraska

FINAL REPORT

POSTSECONDARY EDUCATION
THROUGH TELECOMMUNICATIONS

National Institute of Education Project No. OEC-0-72-0457
Revision #12

Principal Investigator
Jack G. McBride

University of Nebraska
Lincoln, Nebraska

The research reported herein was performed pursuant to a grant with the National Institute of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official National Institute of Education policy.

TABLE OF CONTENTS

Chapter   Page

PREFACE i

I. CURRICULUM PLANNING 1

II. ALTERNATIVE APPROACHES TO COURSEWARE DEVELOPMENT: COSTS AND PROCEDURES 27

III. ECONOMICS 49

IV. FIVE YEAR PLAN OF OPERATIONS 67

V. UMA ADMINISTRATIVE STRUCTURES AND PLANS 107

VI. LEARNING CENTERS 137

VII. COURSE ACQUISITION AND ADAPTATION 173

VIII. DELIVERY RESOURCES IN UMA STATES 193

IX. CONSORTIAL FUNDING PLANS 223

X. COURSE DEVELOPMENT 237

XI. PLANNING FOR COURSE DEVELOPMENT IN 1975 267

XII. FORMATIVE AND SUMMATIVE EVALUATION 283

LIST OF REFERENCES 305

LIST OF APPENDICES

I. AN EXAMINATION OF GOALS OF POTENTIAL AND ACTUAL SUN LEARNERS

II A. THOUGHTS ON LEARNING EFFECTIVENESS

III B. AN ECONOMIC ANALYSIS OF THE UMA-SUN OPEN LEARNING SYSTEM

II C. THE CONTEXT OF COST ANALYSIS

II D. COST-EFFECTIVENESS ANALYSIS FOR OPEN LEARNING

III. FIVE YEAR CASH FLOW MODEL

IV. LIST OF FIVE YEAR TASKS

V. UMA COURSE DEVELOPMENT PROCESS

VI A. DEVELOPING STUDENT ACHIEVEMENT MEASURES

VI B. PLANNING FOR THE EXTERNAL EVALUATION OF UMA

LIST OF TABLES

Table		Page
1	Goal statements listed in the order of the average importance ascribed to them by SUN learners (N=367).	11
2	Academic (Degree) goals of a sample of SUN learners (N=367).	12
3	Budget estimates for each of five approaches to courseware development.	32
4	UMA projected cash budget income, 1975-1979	55
5	UMA projected expenses 1975-1979	56
6	Projected cash income and expenses for a model state delivery system (SUN), 1975-1979.	57
7	Average production cost per student degree equivalent course	60
8	Average delivery cost per student per degree equivalent course	60
9	Average cost per student course: UMA and Open University	61
10	Average instructional costs by type of of institution	62
11	Hypothetical benefit and cost comparison.	63
12	UMA income loss from sharing	99

Table		Page
13	UMA enrollment projections	122
14	Five year projection of student enrollment in UMA states	123
15	Tentative UMA budget for 6, 12, and 18 months	136
16	The preferred services of learning centers by their staffs.	149
17	Rank ordered importance of activities performed by learning center staff.	151
18	Inventory of existing television, radio, and newspaper stations/systems in UMA states.	195
19	Fiscal year 1975-1976 projected budget, State University of Nebraska (SUN)	232
20	Summary of consortial funding plans and accomplishments, as of February 1, 1975	235

LIST OF FIGURES

Figure		Page
1	Current list of members of Academic Council January 31, 1974	4
2	Courses proposed for development during 1975	17
3	Suggested courses for development by UMA, 1975-79.	18 - 22
4	Certificate of Completion	24
5	Estimated timelines for five approaches to courseware development	33
6	Table of Organization	80
7	Members of Advisory Panels	118 - 120
8	Field evaluator report form: potential UMA acquisition	181
9	Review panel evaluation form: possible UMA acquisition	183
10	Public television coverage in the UMA region	196

PREFACE

There are three sets of conflicting emotions which confront those who seek to engage in new or different human enterprises. There is the tension between advocacy and inquiry. New movements most often begin with a missionary zeal on the part of advocates of the movement. It is often some time before the advocacy permits or enhances careful inquiry into the premises and practices of the movement. It is never easy to question, when you are trying to get something in motion.

There is similarly a tension between producing and examining. The continued existence of a program or movement often depends on whether that program can produce what it purports to produce, in sufficient quantity and with sufficient quality. In the production milieu, there is precious little time for reflection. Deadlines are so close and so many: there is a tendency to reduce the proportions of precious time and resources needed to test and to probe. Yet without such testing and reflective analysis, that which is produced may not stand the ravages of time or public judgment.

There is also a tension between change and stability. Most humans crave some measure of regularity, some reduction of ambiguity. Yet many new programs touch avenues of the unknown, where regularities do not as yet exist. But to produce consistent quality, there must be a sense of history, an awareness of what has been done, and with what success. There is, in short, a need to standardize in some ways, to increase efficiency and to increase an individual's sense of control over things.

These tensions all exist in the experiment known as the University of Mid-America (UMA). UMA is a regional consortium, comprised of the Universities of Kansas, Kansas State, Iowa State, Missouri, and Nebraska. The regional consortium serves member institutions through the development and acquisition of postsecondary education courseware, the planning, development, and coordination of systems for the delivery of these courses to interested adults, and research and evaluation activities which help inform those within and without the consortium.

Open learning in postsecondary education is basically in an advocacy stage. Attempts are being made to spread the word about open learning, and to garner resources and support for programs of open learning. There is little systematic inquiry as yet.

Most open learning programs, including UMA, operate at a relatively modest funding base. Still, much is expected from that kind of base, and so few programs indulge in the apparent luxury of significant self-examination. And, in most programs, the nontraditional, with its uncertainties and ambiguities, confronts the demand for standardization.

This document serves as the Final Report to the National Institute of Education pursuant to Grant #OEG-072-0457, Revision #12. It directs itself to the important national issue of open learning and nontraditional study. Specifically, the Final Report addresses 12 work assignments given to UMA as part of the Calendar 1974 NIE grant. The Report describes investigatory procedures employed, research and development undertaken, and achievements and conclusions for each of the 12 work assignments for the 13-month period from January 1, 1974, through January 31, 1975.

The reader will note instances of advocacy in this report, for the UMA staff members find reason for enthusiasm in the idea of open learning. Hopefully the reader will also find evidence of inquiry, for all is not yet known about how to provide greater access to postsecondary education, and there are questions to be raised about the public statements of advocates.

These pages reveal considerable evidence of production during 1974, but also serious examination of purposes and practices. Perhaps not enough examination or production, but there is an important start recorded here.

And finally, both change and stability resulted from work during 1974. There is growth in the vision of what UMA could be, and in the experience of the staff. There have been changes in purpose, in understanding, and, most pragmatically, in staffing. But there is also a greater stability present now, resulting in part from a broader base of experiential knowledge, and from a better understanding among the staff as to who everyone else is, what they do and how they do it.

Not all the work assignments given to UMA during 1974 were accomplished in the way they might have been, nor with the richness of outcome that might have been desirable. Others were done in a style and with a result that goes much beyond the intention of the assignment. This document is hopefully an honest appraisal of the year's work. No attempt is made herein to suggest a depth of analysis that did not exist in the actual work that was done, nor to paint a picture of a utopian program. But neither does the document seek to downplay those things that were accomplished during the year.

There was much done, and much was learned. Much remains undone, thus forging a challenge for the next years. Most importantly, this is only a document, not the whole of the 1974 UMA experience. There are important events and ideas that undoubtedly have been omitted in this document. Despite its limitations, the report may be useful in describing some of the returns on the 1974 investment in UMA.

CHAPTER I
CURRICULUM PLANNING

WORK ASSIGNMENT #1

> Complete the planning of a two-year postsecondary open learning curriculum to be offered, including enumeration of courses in order of priority of development, establish SUN open learning program goals, establish a procedure for the study of student goals and objectives, develop a plan for the awarding of a certificate of achievement, and develop a plan for a credit by examination program.

This assignment called for planning a curriculum which will take into account both the needs of UMA and its affiliated statewide delivery systems, and the needs of the various clienteles to be served by the system.

The specific call for a "two-year" curriculum in the work assignment implies junior college equivalency, perhaps leading to an Associate of Arts degree. When this assignment was conceived, there was some thought given to the idea that SUN would offer an Associate of Arts degree. As planning during 1974 proceeded, however, this perspective was modified. Development of a curriculum approximating the first two years of college would unwisely limit UMA's options in the development of non-credit enrichment offerings and continuing professional education courses. Such a limitation would be contrary to the spirit of the goals proposed for UMA.

The intent of this work assignment, then, was not only to establish an instructional and curricular philosophy for the regional open learning model being developed by UMA, but also to develop specific plans which would enable UMA ultimately to provide a relevant array of open learning courses and other educational services for a different adult clientele than is presently served by existing institutions.

This chapter contains six sections: In the first section, a brief review of major outcomes resulting from work during 1974 on this assignment is provided. Next, a procedure developed by UMA for making curricular decisions is described. The third section focuses on a statement of goals derived for UMA. Fourth, curricular options confronting UMA are described. Fifth, courses suggested for development during 1975, and for the next five year period, are listed. Finally, inquiries into certificates of achievement and credit for experience are described.

SUMMARY OF MAJOR OUTCOMES

- An Academic Council was created to plan a long-range curriculum and to oversee the development of courses pursuant to this curriculum.
- A statement of open learning goals was developed.
- Curricular options were outlined.
- A tentative list of 55 courses for development or acquisition over the next five years was constructed.
- SUN developed a Certificate of Achievement for award to students registered for credit upon completion of SUN courses.

CURRICULUM DECISION PROCEDURES

There are many decisions to be made about the nature and direction of UMA's curriculum. Much of the background work to inform these decisions will be accomplished by the UMA professional staff. In addition, however, it is important to obtain input from academics, administrators, and students. It is also essential that the institutional members of UMA provide continuing input to curricular decisions.

To that end, UMA has empanelled an Academic Council to oversee all matters pertaining to curriculum development. This Council is specifically described in Article II, Section 5 of the UMA Bylaws:

> The Board of Trustees shall appoint an Academic Council whose members shall be five representatives, including one academic administrator, from each of the institutions participating in the operations of the corporation. Such members shall serve at the pleasure of the Trustee representing the institution on whose behalf the Trustee serves, but only while the institution itself is participating in the operations of the corporation and while its chief executive officer is serving as a Trustee; provided, however, that the Board of Trustees may provide for non-voting members of the Council representing institutions not actively participating in the operations of the corporation. Members of the Academic Council shall be appointed upon nomination of the chief executive officer of the respective participating institutions. The Academic Council shall advise the Board of Trustees on academic and curricular policy, and shall conduct its activities according to such directions as the Board of Trustees may prescribe.

It is the responsibility of the Academic Council to assist in stating goals for UMA, to select courses for development by UMA, and to monitor the progress of UMA in fulfilling these curricular plans and priorities, modifying them as experience dictates.

Figure 1 contains a list of members of the Academic Council from the five institutions participating in UMA, current as of January, 1975.

Decisions about curricular directions in general, as well as about the specifics of what courses to develop or acquire, or what other kinds of educational services to sponsor, are thus to be made as a joint effort of the UMA professional staff and the Academic Council, together with input from other interested parties. Such decision making is critical to the viability of UMA. There are a number of ends that could be pursued;

IOWA STATE UNIVERSITY

Dr. Harold R. Crawford
Dr. Thomas E. Hannum
Dr. Richard Herrnstadt
Dr. Ruth P. Hughes
Dr. Edwin C. Lewis
Dr. Charles Donhowe,
  Delivery Systems Coordinator

KANSAS STATE UNIVERSITY

Dr. William E. Carpenter
Dr. Jerry Frieman
Mr. Norman Harold
Dr. John Spangler
Dr. John Steffen,
  Delivery Systems Coordinator

THE UNIVERSITY OF KANSAS

Dr. Ronald Calgaard
Dr. Peter Dart
Dr. Philip McKnight
Dr. Theodore Wilson
Dr. Russell Mills
Dr. Robert Senecal,
  Delivery Systems Coordinator

UNIVERSITY OF MISSOURI

Dr. Luvern Walton, Columbia Campus
Dr. John Mowrer, Columbia Campus
Dean Robert S. Bader, St. Louis Campus
Dr. Hans W. Uselman, Kansas City Campus
Dr. Glen Haddock, Rolla Campus
Dr. Lynn Martin,
  Delivery Systems Coordinator

UNIVERSITY OF NEBRASKA

Dean William Muse, Omaha Campus
Dr. Robert Eliot, Medical Center
Dr. Leslie C. Duly, Lincoln Campus
Dr. John J. Scholz, Lincoln Campus
Dr. William Torrence, Lincoln Campus
Dr. Milton J. Hassel,
  Delivery Systems Coordinator

UNIVERSITY OF MID-AMERICA (UMA) STAFF:

Dr. William Bondeson

Figure 1. Current List of Members of Academic Council
January 31, 1974

thoughtful decisions must be made about which goals and procedures make the most sense for UMA.

GOALS

The development of UMA's program goals was influenced in part by reports of the Commission on Non-Traditional Study and the Newman Task Force, both of which call for increased access to postsecondary education in the American Higher education system. For example, the Commission on Non-Traditional Study (1973) stated: "The fundamental recommendation of this report is simply to restate an old ideal: Full educational opportunity should be made realistically available and feasible for all who may benefit from it, whatever their condition of life," and "there should be continued experimentation with forms of nontraditional study which minimize the traditional rigidities of campus life: time, space, and systems of academic accounting"(pp. 7,49). According to the first report of the Newman Task Force, (Newman et al, 1971) "What is needed is not just gradual extension and expansion of the present form of continuing education, but new structural approaches in parallel" (p. 69).

In the light of these and similar statements, the somewhat narrow approach of offering only college credit courses, directed exclusively towards those seeking credit leading to degrees, was not regarded by UMA as appropriate. For, as Newman suggests, such an approach would merely constitute a gradual expansion of the present form of continuing education. Rather, it was determined to design a somewhat different kind of system which would seek to be responsive to the needs of a range of kinds of learners, whether for college credit, personal or professional training, or enrichment. Choosing this broader option might serve a greater social function than offering a narrow, college-oriented function; would, by avoiding duplication of services, increase enrollments in the system and improve the prospects for economic viability; and would thereby serve to make UMA a model with broader adaptive possibilities.

With this general philosophy in mind, UMA drafted an open learning goals statement, which was reviewed by both SUN staff and the Academic Council, and approved by the UMA Board of Trustees. This statement sets forth the aims of the UMA open learning system, as follows:

"The University of Mid-America (UMA) is being created to provide an open learning system for persons in those states being served by member institutions of MASUA (Mid-America State Universities Association) who are unable or are reluctant to pursue their college-level educational goals in more traditional ways. UMA is a major experiment in American postsecondary education, whose mission can be broadly characterized as:

> creating and implementing a variety of learning approaches to provide high quality, relevant college level educational experiences primarily for people who heretofore have not had access to, or have not taken advantage of, college-level education
>
> while
>
> Carefully and systematically studying and documenting the effects and consequences of alternative ways of developing and providing these educational opportunities.

"In UMA, open learning implies a commitment to increased accessibility to college-level education, and this accessibility means more than physical convenience -- it means a readiness to meet students where they are educationally, as well as geographically, and to provide careful academic counseling and assessment to try to help them meet their educational objectives. The goals of any open learning program ought to be to make learning available to all who want it, regardless of where they live or what hours they work. In addition, open learning should reduce the constraints on how people can learn by utilizing new educational techniques and methodologies, and should provide new opportunities for interdisciplinary study.

"Although this open learning program will relate to and complement on-campus programs, using resources in partnership to benefit students, it will differ from the traditional on-campus program in the nature and location of its clientele, the delivery of its educational offerings, and its orientation to the learner. The program will encompass offerings either providing credit which may lead to degrees or given purely for enrichment, self-development, or career improvement.

"Anyone can enroll in this open learning program, but the academic advising available to students must be strong and continuing so that students choose appropriate learning opportunities. In those courses for which academic credit is appropriate and is desired by the student, academic quality must be sufficiently high so that credit can be earned by the student and accepted by other institutions.

"In order that students can study during hours convenient for them and at a pace compatible with their other responsibilities, this educational system will be designed so that it is not dependent on time or place. A variety of learning resources (such as printed materials, television, audio cassettes) will be made available. The effectiveness of these various resources in achieving educational objectives and personal goals will be continually evaluated.

"The open learning goals of UMA may be stated as follows:

1. To direct its efforts for the benefit of a population heretofore unreached by existing postsecondary educational institutions, and to explore ways of delivering education to students hesitant to approach a traditional educational setting. The program will direct attention to those students who cannot or who are reluctant to attend a regular campus-based program. It is not the intent to seek out students who would otherwise enroll in existing programs in private or public colleges or universities.

2. To make available educational opportunities, to serve both of the following functions:

   A. To provide instruction for advancement toward a degree in traditional educational institutions. To that end, UMA will work closely with various colleges and universities to establish an acceptable curriculum for those students who wish ultimately to work toward a degree on a traditional campus.

   B. To satisfy the personal or professional interests of individuals to increase the quality of their life through education, without necessarily pursuing a degree. To that end, UMA will seek to create and establish, in concert with colleges and universities, offerings directed at contemporary issues and human problems, including some continuing professional education, that will appeal to a broad range of interests and needs. Such offerings would provide educational services without necessarily offering academic credit. Appropriate faculty will participate in the development, review, and delivery of all UMA offerings.

3. To provide some new external degree programs in the future for those people who wish to obtain an undergraduate degree, but who are reluctant to or who cannot enroll in an existing educational institution. Probably only a limited number of degree areas might be available through UMA.

4. To prepare, deliver, and coordinate interdisciplinary offerings in an attempt to create learning opportunities not always available in traditional institutions. Such courses could also be adopted by existing colleges and universities to augment their own on-campus programs.

5. To make available in each state an educational program that focuses on the learner, using both UMA-developed offerings and existing institutional resources to facilitate independent, individually tailored progress. In this connection, faculty roles in advising and individual counseling are especially important.

6. To explore and document a variety of approaches to the development and delivery of instruction and to explore alternatives in content and form. Careful attention will be given to the effects of these various alternatives on learning, attitudes toward learning, costs, effectiveness, etc.

7. To maintain a program with a high level of academic quality with costs to students which are reasonable, and with financial aid available to those who need it.

"UMA thus proposes to make major strides toward understanding the problems and potentials of extending the educational franchise, while providing an academically respectable, socially meaningful, and personally satisfying educational program for a new college-level education clientele."

It could be argued that these institutional goals are not student goals, even though student goals are implied in the above goal statement. Because a statement of learner goals must proceed from an analysis of learners actually participating in the system, any rigorous a priori statement of student goals, before there was a significant number of learners enrolled, may not be as representative of the range of learner goals as might be desirable. Therefore, it is planned that a statement of learner goals should gradually evolve, based upon a continuing analysis of the characteristics of learners actually enrolled in the system, and of potential learners who have chosen not to enroll at present. A start has been made on such an analysis of the characteristics of learners actually enrolled in the system, and of potential learners who have chosen not to enroll at present. A start has been made on such an analysis. The Office of Research and Evaluation has completed a working paper on the goals of potential and actual learners. (Working paper #1 is reproduced in Appendix I.) The report reveals some insights into the goals of learners enrolled in the first SUN courses (Accounting and Psychology). Table 1, for example, indicates the relative importance to these learners of a variety of goal statements. The goal, "Simply, to learn," was regarded by 77% of the respondents as a very important goal.

Another way to look at student goals is to consider degree aspirations. Table 2 shows the stated degree aspirations of those enrolled in the first SUN courses. The data suggest a sizable group of people interested enough to enroll in a course, but with no degree aspirations at present. Such data must be continously collected and analyzed if the personal goals of learners are to be portrayed and considered.

CURRICULAR OPTIONS

On the basis of the goals statement described above, UMA began considering various curricular options. This planning proceeded in light of previously conducted market surveys, economic considerations, and the possible impact that UMA curriculum development efforts might have on traditional institutions.

Several curricular options were considered. First, UMA might offer a standard two-year Associate of Arts degree program, much like that of a junior or community college. But, as suggested above, in light of

Table 1. Goal statements listed in the order of the average importance ascribed to them by SUN learners (N=367).

Goal Statement	Not Important (0)	Somewhat Important (1)	Very Important (2)	Average Rating
l. Simply, to learn	6%	17%	77%	1.71
e. To attain specific skills that will be useful on a job	19	28	53	1.33
n. To increase my confidence to undertake learning projects	21	31	48	1.27
k. To improve my self-image	20	38	42	1.23
f. To increase my awareness of different philosophies, cultures and ways of life.	27	37	36	1.09
g. To improve my chances of making more money	31	33	36	1.06
o. To use leisure time creatively.	32	35	33	1.00
i. To learn how to participate effectively as a citizen in my community	35	44	21	.87
m. To improve my professional status	44	26	30	.86
j. To develop an understanding and an appreciation of science and technology	37	43	20	.84
c. To develop a new career	45	28	27	.81
b. To discover my vocational interests	4[illegible]	34	22	.77
a. To increase my appreciation of art, music, literature and other cultural expressions	45	35	20	.75
h. To obtain a degree which is required for my present or future job	[illegible]	42	22	.67
d. To become involved in social and political concerns	51	37	12	.61

Table 2. Academic (Degree) Goals of a sample of SUN learners (N=367).

Degree	Percent of Sample
None	38%
Associate degree (A.A. or equivalent)	11%
Bachelor's degree (BA, BS, etc.)	30%
Master's degree (MA, MS, etc.)	8%
Doctor of philosophy or education (PhD or EdD)	3%
Medical degree (MD, DDS, etc.)	1%
Law degree (LL., B., JD)	1%
Theological degree	0%
Other	8%

the nature of the target audience and the UMA goals, this alternative appeared too restrictive and would have the added potential disadvantage of creating inappropriate competition with other postsecondary programs in the region.

A second alternative, similar to the first, would be to offer a standard four-year Bachelor of Arts external degree program, featuring selected major fields within that program. The same objections could apply here as to the first alternative. Credit courses applicable to degree programs in existing institutions, however, should indeed be among the possible options for students, since many student identified in market surveys indicated that they wished college credit toward some kind of degree.

Third, UMA could offer a mix of lower-division courses, not necessarily structured around a degree program, and include some nontraditional courses not found in most institutions. This alternative would presumably result in a more open curriculum and would also offer the economic advantage of providing courses that would be useful in on-campus situations, thus potentially increasing UMA's ability to lease courseware and increasing its income opportunities. Such curricula, however, would still fail to provide services that many learners desire, particularly related to non-credit offerings.

As a fourth alternative, UMA could develop a curriculum which includes a variety of credit (but not necessarily traditional) courses at a lower-division level, along with added offerings for specialized needs at the advanced undergraduate, graduate, and non-credit levels. In addition, the curriculum could include, through each state delivery system, existing correspondence courses, on-campus courses, or independent study courses where these would help students meet educational objectives. Such a curriculum would include educational offerings for continuing professional education, paraprofessional training, and personal enrichment, as well as for advancement toward college credentials.

A decision has been reached, after deliberations among the UMA staff, the Academic Council, and consultants retained by UMA, to focus upon the fourth alternative. Within this general framework, some courses will be developed primarily as credit-bearing courses applicable to a baccalaureate degree, for those learners interested in such credit. In addition, other credit or non-credit courses or mini-courses will be designed: for in-service or continuing professional education needs, for which credit may not be needed; for specialized target populations, such as nurses or penal authorities; and recreational or self-development courses for people interested generally in certain topics, but not for credit.

It should be noted that the word "course" in UMA does not necessarily mean a standard single-entry and single-exit disciplinary-based package. Rather, UMA intends to develop courses that consist of several modules that can be put together by learners in different combinations to achieve different personal objectives.

Thus, some courses may serve different purposes for different people. For example: a course in Introductory Biology is scheduled for development in 1975. The course, developed by the Biological Sciences Curriculum Study, consists of 80 mini-courses. Some people might take all 80 mini-courses, and obtain full credit toward a degree. Other people might select certain of the mini-courses, and, without receiving college credit, take those selected mini-courses simply because they are interested in the topics. Still others, such as LPNs, might take part or all of the mini-courses as fullfillment of continuing certification requirements.

An important question in all of this has been the level of academic quality to be attained in UMA courses. The Academic Council has agreed that UMA credit courses should be at a level of academic quality no lower than courses offered by the institutions participating in UMA. At the same time, a commitment to modularization of most courses, credit and non-credit, and careful advising and counseling, will make it possible for students to enter or exit courses at different points as determined by their needs, abilities, and interests. The attempt here is to achieve a high level of academic quality without sacrificing carefully formulated provisions for meeting individual needs.

PRIORITY COURSES FOR DEVELOPMENT

It is clear that considerable more work must be done in conceptualizing the nature of UMA's curriculum. Of particular importance is the development of some thoughtful scenarios depicting the implications of selecting a particular approach to curriculum.

While that is being done, though, development work must proceed. UMA must develop and/or acquire courses, and make those courses available to the state delivery systems. With this reality in mind, the Academic Council, working with the UMA professional staff, has recommended a tentative list of 55 courses to be developed during the next five years. This particular list of possible courses was developed by the UMA Academic Council and members of the UMA staff in accord with the following criteria:

1) The list should include enough basic material in the general areas of human knowledge to make it possible for learners whose aim is credit toward a degree program to take approximately two years of course work which can be applied towards an AA or BA degree, and which will satisfy general education requirements at most institutions. Any credit course will also be available on a non-credit basis, and most will permit partial credit for completion of learner-selected modules from the course.

2) The list should contain some credit or non-credit offerings designed for particular target audiences such as senior citizens, teachers, health para-professionals, etc., interested in skills for personal improvement, personal enrichment, or in-service vocational or professional training.

3) The list should reflect the fact that not all courses can be produced in their entirety by UMA. It must include courses which can be acquired from other sources either with or without modification. Thus the financial constraints of totally produced courses, the availability of appropriate faculty and staff, are all factors which have influenced this list.

Of these 55 courses, 11 were proposed for development during 1975. Figure 2 contains a list of those suggested courses, plus an indication of the purposes each course might serve.

Figure 3 contains a complete list of the 55 course titles recommended by the Academic Council for UMA development. There are both advantages and limitations to such a list. The list does provide some guidance as to what should be developed. This is no small matter, for UMA is faced with selecting, from the whole of human knowledge, something that can be meaningfully studied, and meaningfully produced.

In addition, the list of possible courses represents a range of topics, which might be applicable to the needs of many kinds of people.

There are also limitations to the list, however. For example, the list may reflect primarily the presence of certain kinds of advocates on the Academic Council. If a particular body of knowledge had no advocate on the Council, that body of knowledge may not be represented in the list of courses. The presence of such a list may also reduce the ability of UMA to be responsive to changing public interests or needs. There is a certain rigidity inherent in any recorded list. Finally, the list is by and large very general; there are no clear guidelines for the selection of specific content in a given course.

Work during 1974 must be regarded as a beginning step in defining appropriate courses for development. The danger is that courses will be developed or acquired without reference to an overall curricular philosophy. UMA must guard against such a possibility.

	I College Credit for Credentialling	II Skills for Personal Improvement	III In-Service Professional or Vocational Training	IV Personal Enrichment
1. Computer Science	X		X	
2. Introductory Biology				
Entire course	X		X	
Ecology Module	X		X	X
Human Biology Module	X		X	X
3. A Cultural History of the Great Plains	X			
Local History Module	X			X
4. Consumer Education		X		X
5. American Literature	X			X
6. Introductory Economics				
Entire Course	X		X	
Module on Personal Finance		X		
Module on Income Tax		X	X	
Module on Business Management	X		X	
7. Expository Prose				
Entire Course	X	X		
Module on basic writing skills		X		
Module on Technical writing	X		X	
Module on Business writing			X	
8. You and the Pre-School child	X		X	X
9. Nutrition		X	X	X
10. American Political Process	X			X
11. Accounting II	X		X	

Figure 2. Courses proposed for development during 1975

1. Introduction to Computer Science - A basic course for credit giving general information about computers and their uses. The target audience for this course includes a wide variety of personnel in business, industry, and agriculture who have a need to understand how computers work. The course could be useful in up-grading employees' skills and in managerial training programs.

2. Introductory Biology - This credit course, largely acquired from the Biological Sciences Curriculum Study group, will consist of approximately 75 mini-courses, and will include modules in reproduction, cell physiology, evolution, human biology, and ecology. These mini-courses will provide students with a wide variety of options and tracks; individual modules can be taken as single-credit courses or modules can be put together in a variety of ways on selected topics in the biological sciences. A student could take this course as a basic biological science; modules from the course could be used in health para-professional training, or, modules from this course could be put together with social science materials to gain a broader perspective on ecological problems.

3. A Cultural History of the Great Plains - a unique, interdisciplinary credit course using resources in the Humanities and Social Sciences; the course will have a wide variety of modules which can be studied independently or in larger groups. At least two "tracks" of the course will be available and modules in the course will be developed for individualized study and local community needs. Target populations include persons interested in local or regional history, senior citizens, students on traditional campuses for whom such a course is not available, and persons interested in college credit in history.

4. Consumer Education - a non-credit course with modules on comparative shopping, unit pricing, product evaluation, buying on credit, and family risk management. Students may select from these and other modules to build a course according to their needs. Target populations include senior citizens and heads of households interested in acquiring personal skills.

5. American Literature - a credit course designed to give the student a greater appreciation of literature and the motivation to read it on his own. The course could focus on perceptions of American life by writers and could include modules on Regional Literature, Minority Literature, Social Protest Literature, etc. Target populations include high school students wanting a head start on college work, persons seeking to fulfill a general education requirement in the humanities as part of a planned degree program, local and regional historians, and persons desiring general cultural enrichment.

6. Introductory Economics - a basic credit course in economics with modules on price theory, supply and demand, monopoly, banking, finance, income tax, productivity, etc. These modules could be built into larger units on understanding the market place, family and consumer economics (which could also be a module in the Consumer Education course above) and economics for the small business man. Target

Figure 3. Suggested courses for development by UMA, 1975-79.

populations include large and small business managers, farmers, heads of households, and management trainees.

7. Expository Prose - a basic credit course in composition stressing the units of communication with modules on words and units of meaning, construction of sentences and paragraphs, and kinds of writing style. These modules could be built into courses on business writing and on technical writing. The course will satisfy most general education writing requirements for those seeking college credit and will also be addressed to a target audience of persons seeking to upgrade personal or vocational skills.

8. You and the Pre-school Child - a course focusing on the development of the child to age six with modules on physical development, mental development, learning abilities, and the development of personal and communications skills. Target populations include nurses, child development specialists, pre-school teachers, and parents.

9. Nutrition - a modularized course which can be taken for credit or for non-credit. The course will include modules on human nutritional needs, physiological and chemical bases of these needs, food quality, diets, and food preparation. As a non-credit course the target populations can include senior citizens and homemakers. As a credit course, it can serve in the training of food technicians, nurses, dietitians, and restaurant managers.

10. American Political Process - a modularized course with units on democratic decision making, local government, state government, lobbying, pressure groups and constitutional law. The modules can be built into many courses for political party workers, government employees, union members, and for purposes of general education. The course should be useable to satisfy most general education and American Government requirements.

11. Accounting II - a continuation of the first SUN Accounting course with modules on the Accounting cycle, mass processing of accounting information, current assets, liabilities, non-current assets, cost accounting, managerial accounting concepts, income tax planning, and fund accounting. Target populations include large and small business managers, farmers, self-employed persons, persons interested in tax preparation, and those seeking to continue work toward a degree.

12. The Arts - a basic course in art history--art in the context of social struggles, intellectual history, cultural values, etc., plus focus on 20th century arts in America today: The expression of the varieties of the fine Arts (e.g. music, graphic arts, drama, dance, film, etc.).

13. The Midwest and the Contemporary World Economy - stressing an interdisciplinary approach from the point of view of agricultural economics and related to the world food crisis.

14. Pollution, Environment and Ecological Systems - interdisciplinary course using materials from the natural sciences, social sciences, and humanities.

15. Comparative Religion, Ethics, and Philosophy - using Eastern and Western materials.

16. The Metric System (non-credit).

(Figure 3 (Continued)

17. Interdisciplinary survey of American Culture using literature, art forms, religion, history, etc.

18. Health Care Delivery - to introduce the student to components of a modern health care delivery system and to the professional or career opportunities therein.

19. Communication Disorders (graduate level specialized for teachers).

20. A History of Agriculture.

21. A Foundation Natural Sciences course (based on British Open University material).

22. Para-professional course for corrections personnel (non-credit).

23. Elementary statistics - elementary probability theory, sampling, hypothesis testing, etc., to include material on interpretive statistics (what does it mean to say there is a 30% chance of rain?) and possibly material on psychological tests.

24. Law and Society - exploration of the ways the legal profession affects the citizens and institutions of society, aimed at a general population, but to include some information on law as a profession.

25. Principles of design - a course to explain the basic elements of graphic design, with regular application to design experiences such as interior decoration, advertising layout, flower arrangement, etc.

26. Basic Business Management (non-credit).

27. What is Human Communication? - emphasizing spoken communication, problems of linguistics and psycho-linguistics, human vs. animal communication, the nature of words and the uses of words in context; should include interpersonal communication including non-verbal communication and also materials on persuasion and propaganda with an analysis of news reporting and advertising.

28. Basic Music - a course to encourage involvement at the performance level and to broaden the range of musical enjoyment by presentation of various forms and styles, including historical developments.

29. Para-professional course for nursing home personnel (non-credit).

30. Literature of American Minorities.

31. Behavioral Biology (Ethology) - an interdisciplinary approach to behavior to include the study of both animals and man, would include elements of ethology, physiological and comparative psychology, anthropology and sociology.

32. Applied Humanistics I - humanistic principles and problems in police and corrections work (non-credit).

Figure 3 (Continued)

33. Recreation, Leisure Time, and the Environment - a course designed to study the environment and the relationship of environment to productive uses of leisure time and/or in recreation activities.

34. Introduction to Engineering and Engineering as a Profession.

35. Film History - basically a course on the American film, but with emphasis on outside influences, could also include portraits of film makers at work, etc. Possibly including materials on novels made into films.

36. Education in Modern Society - an introduction into the contemporary systems of education in today's society and the career possibilities in education; include the school as a basic social system.

37. Western Cultural History - stressing the artistic and intellectual history of western civilization.

38. World regional studies (e.g. Japan, Africa, Mid-East, Latin America).

39. Applied Humanities II - humanistic principles and problems in the health professions (non-credit).

40. Basic Sociology - modularized approach dealing with the family, social structure, small groups, etc. - stress on American society and how it works and some comparative materials on rural and urban society.

41. Comparative Social Systems and Governments in the 20th century.

42. Mathematics for everyday use - personal finance, cooking, etc. (non-credit).

43. Foundation Humanities Course (British Open University).

44. International relations.

45. The nature of mathematical thought, including materials on "new math" for parents.

46. Basic photography (non-credit).

47. Drug and alcohol problems - from the point of view of psychology of adjustment, using materials from abnormal psychology.

48. Moral and ethical issues involved in technological advances.

49. Continuing education course for lawyers (graduate credit, specialized).

50. Elementary approximation and optimization - with applications to nutrition, farming, etc.

51. History and Philosophy of Science.

52. Science fiction as literature.

Figure 3 (Continued)

53. Journalism and Society - to include materials on journalism as a profession.

54. Educators and the Handicapped (graduate level, specialized).

55. Developmental Psychology - the human life span from child development to the problems of the aging.

Figure 3 (Continued)

ACHIEVEMENT CERTIFICATES AND CREDIT FOR EXPERIENCE

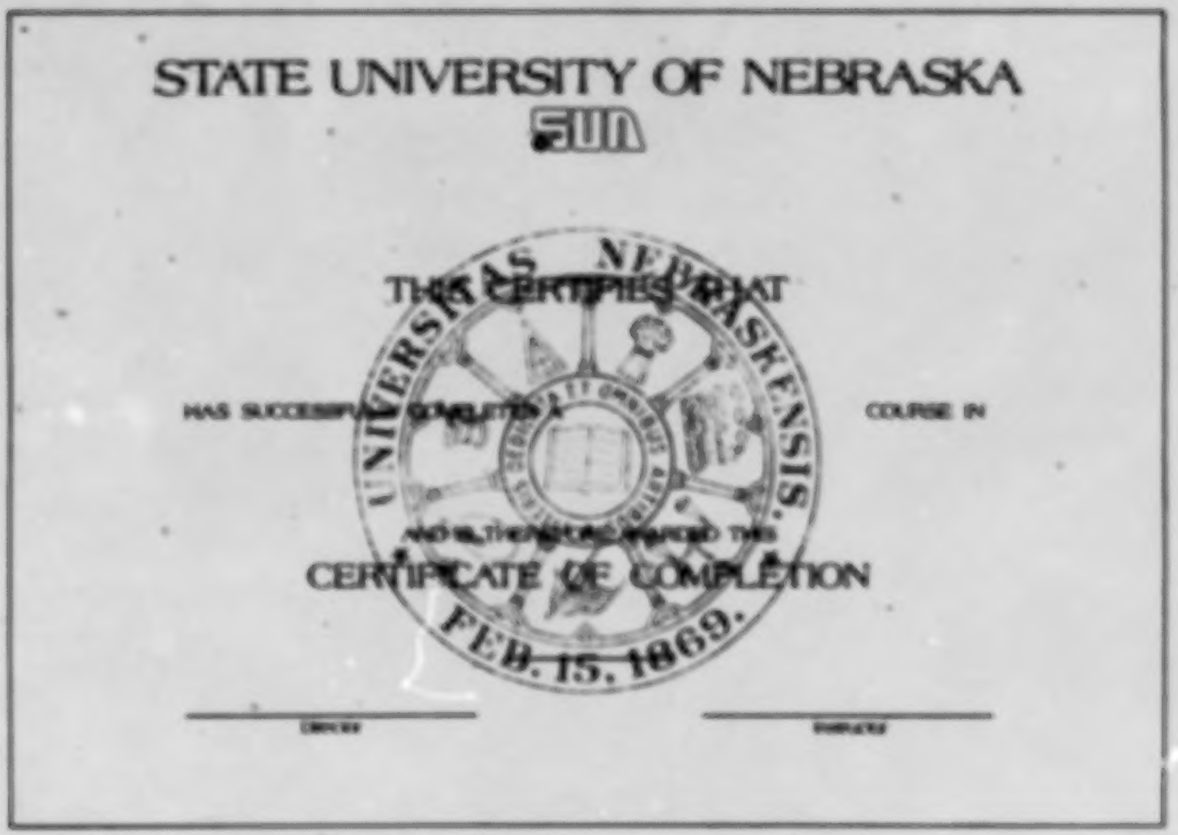
To those who enroll in UMA courses for college credit, the credit itself may be sufficient recognition for accomplishment. Other enrollees for credit may wish some form of recognition beyond simply knowing they have earned credit. Those who enroll in courses for no credit may also be interested in recognition of accomplishment.

Since all UMA courses are offered through individual state delivery systems, credit or other forms of recognition must be given by these states. During 1974, SUN developed a Certificate of Completion for those who completed a course for credit. A copy of the Certificate is included as Figure 4. SUN also made available a letter acknowledging an individual's non-credit participation in a course, should that individual request such a letter.

Many persons enroll in UMA courses on a trial basis, to see if they can succeed in college work. Such people may be particularly interested in a Certificate. Investigations into alternative means of recognizing achievement and/or participation should be continued.

The possibilities of offering credit for experience is becoming an issue of some importance in many institutions of higher education. Some programs, such as the New York Regents External Degree program, have paid particular attention to methods of aggregating credits received from many sources into a coherent degree program. Empire State College is pioneering unique ways of looking at credit for life experience. The CLEP examinations are heavily used throughout the country.

Only a very small beginning was made during 1974 to critically look at the credit for experience issue as it applies to UMA and its delivery



STATE UNIVERSITY OF NEBRASKA

SUN

THIS CERTIFIES THAT

HAS SUCCESSFULLY COMPLETED A COURSE IN

AND IS, THEREFORE, AWARDED THIS

CERTIFICATE OF COMPLETION

FEB. 15, 1869.

Figure 4. Certificate of Completion

systems. The University of Nebraska is a member of CAEL, and UMA is seeking to keep up to date on the work of that project. Problems in qualifying to give CLEP examinations have not been seriously addressed as yet.

It is possible that learning centers in the various states could become instrumental in conducting serious work in this area. The issue, however, did not surface as a high priority demand area for UMA investigation during 1974. Much more thought must be given to the potentials and limitations of developing a program of credit for experience.

SUMMARY

With the empanelling of the UMA Academic Council, the formulation of a statement of open learning goals, ann the development of a tentative list of courses for development, UMA's basic curriculum development mechanism is relatively intact. This mechanism, however, is subject to an evolutionary process of revision and further development as operations proceed.

The role of the Academic Council in the curricular process is to be scrutinized during 1975. Steps are to be taken which will increase the involvement of the academic senates and departments of the participating universities in UMA curriculum decisions, either through more direct involvement with the Academic Council or through alternative channels. Similarly, means to coordinate the participation of all postsecondary institutions in the UMA states will be investigated.

The system's open learning goals are expected to evolve through periodic revisions as operational experience is gained. The goals as drafted mandate a high degree of flexibility in the system's response to learner demands. Learner input to the system will serve more clearly to define certain of the system's goals. Similarly, a statement of student goals for the system will grow out of UMA's experience with enrolled learners, and with those who express interest but do not choose to enroll. Studies of the characteristics of enrollees and non-enrollees, leading towards a formulation of student goals are targeted for the 1975 grant period.

The primary mission of the UMA curriculum must be to offer the nontraditional clientele postsecondary experiences which are equal to, better than, or different from those offered on-campus. This new clientele, however, cannot be expected to pay a penalty in choosing to pursue their education off-campus, in the form of increased costs. Chapter II of this report will deal with UMA's progress during 1974 in developing a system to allow for the prediction of course development costs, and with UMA's plans to conduct studies in system costs relative to the benefits accrued by learners.

CHAPTER II
ALTERNATIVE APPROACHES TO COURSEWARE DEVELOPMENT: COSTS AND PROCEDURES

WORK ASSIGNMENT #2

> Develop a plan for the use and evaluation (including cost and learning effectiveness comparison studies) of at least four different approaches to courseware development. These are to include (a) high-production-quality, high-cost TV programming; (b) low-cost TV programming; (c) adaptations of existing television programming; (d) non-television, other media programming.

As a major innovation in postsecondary education, UMA will undoubtedly attract national attention, and with this attention will come a great deal of interest in the relative cost effectiveness of UMA. Work Assignment #2 deals directly with this question, calling for the development of a plan for conducting studies of the cost and effectiveness of courses created through various approaches to development. Such studies require the identification of alternative approaches to course development with which UMA might experiment during the five years ahead, a careful recording of the costs associated with each developmental approach, and an analysis of the effectiveness of UMA courses once they are developed according to these approaches.

Several points about this work assignment should be made. First, the assignment called for development of a plan, not for implementation of the plan. The work reported herein reflects that understanding.

Second, it is important to consider carefully the wording of the assignment. While costs can over time be computed for each developmental approach, and subsequently compared, the effectiveness question applies to the product of an approach, namely, an actual course. It would thus be difficult, if not inappropriate, to compare the effectiveness of development approaches. Two courses, each produced according to the same development approach, might be found to vary considerably in eventual effectiveness. Much of the work done on this assignment during 1974 was directed at clarifying this important distinction.

Finally, any inference in the assignment that it is possible to conduct learning effectiveness comparison studies of developmental approaches by, for example, directly comparing one course developed according to each approach, must be rejected. If comparison studies are to be done, something (e.g., content, objectives, materials) must be held constant. This implies developing alternative forms of the same course, which has tremendous fiscal implications.

The chapter contains four sections. First, a brief summary of major outcomes resulting from this work assignment is provided. Next, five approaches to courseware development are described. Third, sample budgets and timelines for these approaches are outlined. Finally, some tentative suggestions for cost effectiveness studies are provided.

SUMMARY OF MAJOR OUTCOMES

- Five approaches to courseware development have been identified.
- Budget estimates and timelines for each approach have been developed.
- Tentative plans for cost-effectiveness studies have been developed.

APPROACHES TO COURSEWARE DEVELOPMENT

This work assignment called for a study of four or more approaches to courseware development. After considerable investigation by the UMA staff, it was determined that five approaches to course development could be identified. These represent general approaches to course production. The existence of certain components (e.g., television) in a course, or the timeline followed, does not in itself determine the way a course finally appears to a learner. There may be wide variations in the way courses developed according to Development Approach B, for example, look when they are completed: some may emphasize student projects, some may require field work, some may require less active student involvement. Thus, approaches to production do not necessarily predict or specify the nature of the completed course. Rather, these five approaches are primarily guides for developing budgets and timelines for course development. The five approaches are briefly described below:

> Development Approach A always includes television as one of its lesson components. This approach is used for a course designed, produced and prototype tested by UMA within a minimum 12 month timeline. More time and more production dollars in special personnel and production areas and a minimum 7 member Senior Content Consultant Panel are utilized during the developmental period. This course with its unique design/production needs (i.e. creation of a totally new course requiring the larger Senior Content Consultant Panel; travel and on-location production; highly specialized filming as in some scientific areas; and/or the costs of other special development needs) will require input from all involved in its development for the longest period of time of any other course development approach.

> Development Approach B is used for a course designed, produced and prototype tested by UMA within a minimum 11 month timeline. It always includes television as one of its lesson components. It is generally a course with an academically accepted subject matter organization. The content will require minimal on-location or specialized filming, but extensive use of available film footage may be made. Other already prepared materials may also be adopted. This course has a 3 member Senior Content Consultant Panel.

Development Approach C is used for a course which is produced by UMA, but the content does not require motion visualization for its dissemination. This course could be a print course, an audio course or a multimedia package. Other print, audio components and/or additional components will be developed by UMA. This course's design, production and prototype testing will require a minimum of 9 months for total development. This course has a 3 member Senior Content Consultant Panel.

Development Approach D is used for a course which is acquired intact. It can be a TV course, an audio course, a correspondence course or a multimedia package produced elsewhere. No component alteration or prototype testing are accomplished. Only print development or adaptation (i.e. study guide) need be undertaken prior to its offerings. After its two field tests are accomplished, results will be analyzed for continued or discontinued use by UMA or indication of need to adapt through the UMA process. If adaptation is required, the course utilized Development Approach E. This course has a 3 member Senior Content Consultant Panel.

Development Approach E is used for a course which is leased or loaned (perhaps in trade) to UMA. It is UMA adapted. This course may be a TV course, an audio course, a correspondence course or a multimedia package. It will be adapted (designed, produced and prototype tested) within a minimum 9 month time frame. UMA will probably be required to adapt this course's materials for off-campus adult students. UMA will alter and/or create the television, audio and/or other media necessary to accomplish this adaptation. This course has a 3 member Senior Content Consultant Panel.

SAMPLE BUDGETS AND TIMELINES FOR THE FIVE APPROACHES

Having identified different course development approaches, the UMA staff also generated estimates of the cost of developing courses according to each approach. Each of the UMA departments involved in course development was asked to generate estimates of expenses likely to be incurred by that department in the development of various kinds of courses. Estimates from each department were then combined into a single budget estimate for each approach. As a result of extensive staff reviews, and reviews by outside consultants, final statements concerning estimated costs for each approach were constructed. Table 3 contains a summary of the primary cost centers and dollar estimates involved in course development and revision. These cost estimates will subsequently be used as check points for reality: that is, what actual costs are incurred in developing a course according to each approach?

Figure 5 contains suggested timelines for the various course development approaches. Once again, the reality of these timelines must be checked against practice. Timelines, of course, will affect budgets. Timelines will also be influenced by the people involved in the development process. Timelines are plans only, of course, but do serve as a useful referent in determining resource allocation patterns for the organization as a whole.

PLANNING FOR COST-EFFECTIVENESS STUDIES

First attempts to plan for the kind of comparison studies of courseware development suggested by the work assignment were aimed at examining the intent and viability of such studies. The Office of Research and Evaluation drafted an initial statement on learning effectiveness comparison studies, and the Office of Business and Finance contracted with the Esmee Fairbairn Economic Research Center (TEFERC) for a paper on the economics of the open learning program. It was the intent at that point, to approach comparison studies from both the cost perspective and the effectiveness perspective.

Four possible approaches to conducting effectiveness comparison studies were identified during 1974. These approaches include:

Table 3. Budget estimates for each of five approaches to courseware development.

Course Type	Personal	Operating	Supplies	Travel	Capital	Revision Costs	Total
A	$193,500	$397,900	$11,500	$32,500	-0-	$86,400	$721,800
B	162,400	190,500	8,900	19,900	-0-	63,200	444,900
C	104,500	83,200	1,300	5,200	-0-	31,100	225,300
D	28,700	39,300	3,300	1,000	-0-	-0-	72,300
E	113,800	152,200	7,000	9,500	-0-	50,500	333,000

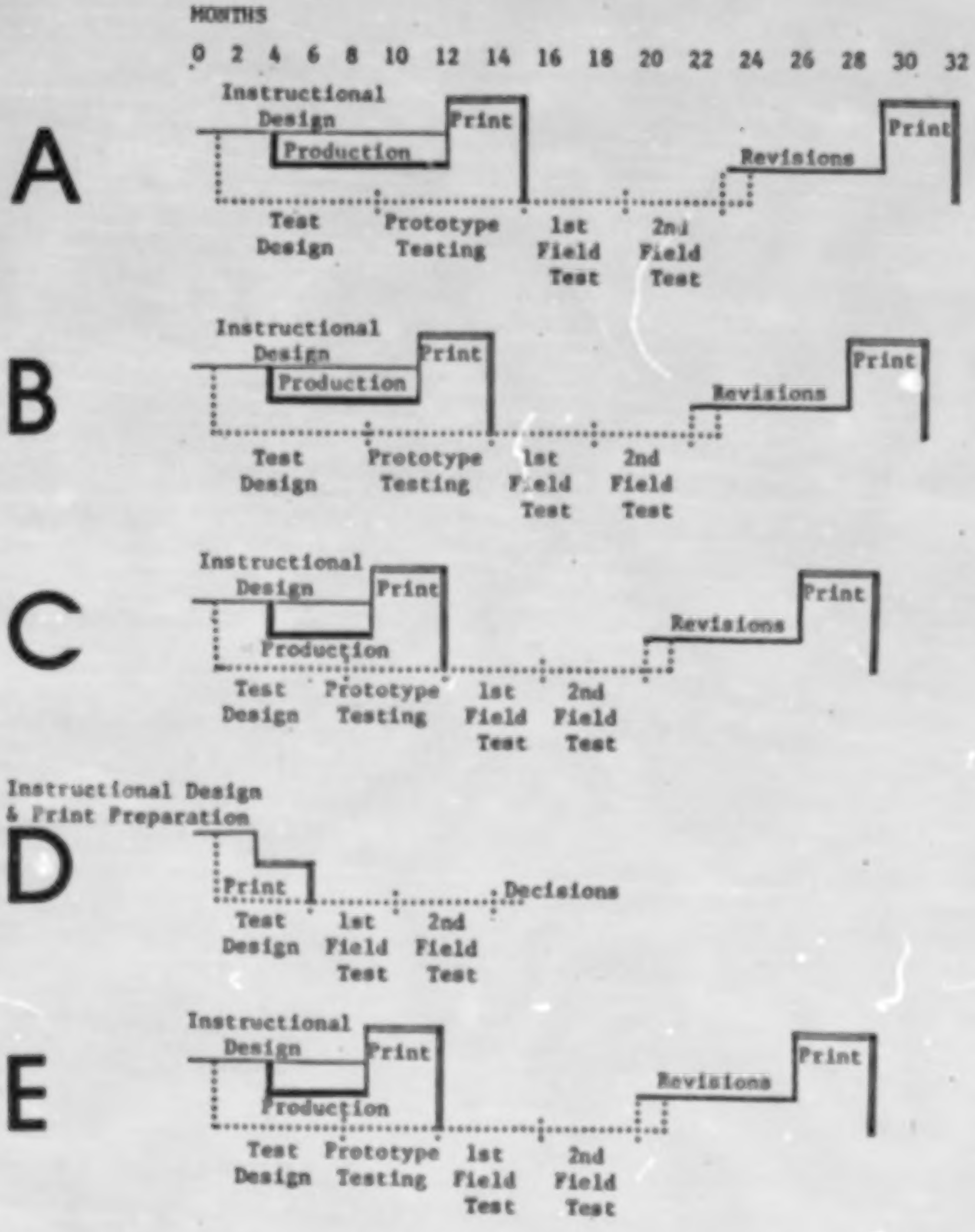


Figure 5. Estimated timelines for five approaches to courseware development.

1. Holding the content and goals of a given course constant, and also agreeing upon a relevant outcome measure appropriate for all forms of the course, it is possible to vary developmental approach. For example: Suppose UMA wishes to create a course in introductory sociology. If the basic goals and objectives for that course are agreed upon as appropriate to the course, it is possible to compare different developmental versions (as above) of the course with respect to learner achievement. In so doing, it would be possible, over time, to suggest which of the course types seemed to produce the greatest learning. It would not be possible to identify which of the elements of a given course type was responsible for differences in achievement, but it would be possible to specify which type, in the aggregate, seemed to work best, according to the achievement variable. The inability to describe in very precise terms the cause of differentiated outcomes (for example, was it the inclusion of high quality, high cost color television segments that made the difference?) might render this kind of comparative study less than useful, until or if a series of such studies pointed up the consistent advantage of a certain course type. This approach may be the least desirable.

2. A second kind of comparative study would hold constant the content and objectives of a course, as well as the criterion measure, but would vary the format or structure of the course. For example: suppose the content was in economics, course goals were agreed upon, and an achievement examination was developed to the satisfaction of those involved. Several versions of the course were then prepared, in which: in one version, learners read the text, then viewed the television, then worked a series of problems, then utilized audio cassettes. In another version, learners first viewed

the television segment, then worked problems, listened to the audio tape, and finished by reading the test. Still another version might be prepared, with another instructional sequence. Students in each version are tested, and the results compared.

It is also possible to conduct attrition comparison studies. That is, a complete course might be developed, containing all of the elements potentially part of a UMA course (television, audio tapes, syllabus, work books, computers, etc.). In one version the entire course, with all elements is offered to learners. In a second version, one or more of the elements is deleted. Achievement results are compared in an effort to find out which aspects of a given course appear to contribute to learning outcomes.

There are a number of other comparisons of this kind that might be made. The use of authority figures, for example, might be explored. Embedded testing might be examined. Each of these kinds of comparative studies would be conducted in an effort to isolate the nature and kind of instructional elements that seem to make a difference in learning outcomes. This kind of study appears to be a unique application of the notion of comparison.

3. There is a third kind of comparative study that might be conducted, in an attempt to understand the relationship between a particular course format, and the content to which it is addressed. That is, holding course format constant, and varying content, do differential learning outcomes occur? For example: in a carefully prescribed program of individualized instruction, in which various elements appear in the same order in all versions of the course, does some content appear more amenable to that

format than does other content? Will the particular course format work in biology, for example, but not in psychology? The difficulty here, of course, is that achievement or criterion measures are not held constant across courses. It is then difficult to directly compare achievement in biology to achievement in psychology. It may well be that criteria other than achievement will be appropriate in such studies. These observations lead to a fourth kind of comparative study.

4. It may be possible to describe each of a number of course types (different content, different pedogogy, etc.), and to document the extent to which each achieves the objectives stated or appropriate to that course. Course types may thus be "compared" with respect to the extent to which each is successful in accomplishing its ends. Glass has addressed this possibility:

> Carroll claimed that curricula do not ordinarily have identical objectives and that to compare them raises philosophical problems about the comparative worth of different objectives. The choice between two competing curricula with greatly different objectives cannot help but raise philosophical questions, or ethical questions, or at least questions of the relative worth of certain values held by a society. Anyone who must make decisions affecting the adoption of curricula or innovative activities for a school is faced with resolving just these questions. I doubt that such questions can be adequately resolved and a rational decision made unless empirical data are gathered which show how well a curriculum attains its own objectives, the objectives of competing curricula, and certain cross-curricular objectives.

Such a comparative approach may require the least amount of obtrusiveness or technical preparation, but would also require the greatest amount of inference in its conclusions. This kind of comparison is possibly most conducive to naturalistic study, to be conducted within limited resources. During 1975, work will begin on a limited number of comparison studies.

A review of literature was initiated to identify pertinent issues and available studies of cost analysis and cost-effectiveness in postsecondary education. Staff in the Office of Research and Evaluation discovered that a similar review of cost analysis methods had already been accomplished by Philip Doughty and Albert Beilby of Syracuse University. The major objectives of the Doughty/Beilby review were: (a) to identify and examine assumptions which underlie systems analysis as an aid to decision makers; (b) to review assumptions within a given educational setting; (c) to review existing applications of cost analysis in various educational contexts; and (d) to consider the design of a generic cost analysis process model for use by inservice and preservice teacher educators. Although the Doughty report focused on cost analysis in teacher education, it served as a reference for representative models and issues in cost-effectiveness analysis in higher education in general. It was the judgment of the UMA staff that the Doughty review of the issues and literature was comprehensive and well organized. Therefore, rather than invest additional resources to produce a similar statement, the Office of Research and Evaluation made arrangements to utilize a portion of the Doughty review as a "state of the art" paper in cost analysis.

The next step taken was to identify issues of cost-effectiveness analysis particularly relevant to open learning and UMA/SUN. Of the large range of issues in cost-effectiveness analysis which UMA/SUN could address, some judgment had to be made about what issues would be most profitable to invest in. To help in this judgment, and with a background in both the theory and the practice of cost-effectiveness analysis, Philip Doughty was asked to prepare a brief paper which would identify cost-effectiveness analysis issues pertinent to UMA/SUN and open learning. That paper was prepared and subsequently reviewed by UMA staff.

The paper itself was seen as one vehicle to inform UMA staff of the issues and options for cost-effectiveness analyses. A second part of the strategy was to meet with Dr. Doughty in a seminar arrangement, whereby UMA staff could raise questions and probe into the potential application of cost-effectiveness analysis. This meeting was seen as important, in that staff outside the Office of Research and Evaluation are the primary internal users of cost-effectiveness studies and might profit from an examination of the issues therein. The plan for cost-effectiveness studies reported later in this section draws heavily on the results of the seminar by Dr. Doughty.

The Office of Research and Evaluation has also made a start into the actual analysis of course costs. In that cost-effectiveness studies require the proper analysis of development and delivery costs, staff from both the Office of Business and Finance and the Office of Research and Evaluation have worked cooperatively (a) to begin to identify the student and course costs for the first two courses developed and delivered by SUN; and (b) to locate areas where cost data are not available in sufficient detail to make certain descriptions and comparisons.

In summary, then, four main papers were developed during 1974 related to cost and learning effectiveness comparison studies. The four papers listed below are found in Appendix II of this report:

A. Thoughts on Learning Effectiveness Comparison Studies - Dennis D. Gooler, Director, Office of Research and Evaluation, State University of Nebraska.

B. Economic Analysis of the UMA/SUN Open Learning System - Richard Attiyeh and Keith Lumsden, Associates, The Esmee Fairbairn Economic Research Center.

C. A Review of the Context of Cost Analysis - Philip Doughty, Assistant Professor, Department of Instructional Technology, Graduate School of Education, Syracuse University.

D. Cost-Effectiveness Analysis Alternatives for Open Learning Programs - Philip Doughty.

Given this background work, the Office of Research and Evaluation sought to develop a general plan for cost-effectiveness studies for UMA/SUN. The two main questions addressed in this effort were: (1) Should UMA/SUN engage in systematic cost-effectiveness studies; and, (2) If so, what kinds of studies should be undertaken?

Should Cost-Effectiveness Studies Be Undertaken?

The rationale for UMA/SUN engaging in cost-effectiveness studies appears to be compelling for at least five reasons. First, the sponsors of UMA--NIE, foundations, and affiliates--must judge the worth of their investment in the enterprise. UMA will probably be judged on the basis of its viability as an organization which is distinct from existing agencies and which contributes to the educational and general health of the region. UMA will also probably be judged on the efficiency of its development procedures, and on the services it renders. Also, UMA will probably be judged on the benefits and costs which UMA products and services create for individuals, communities, and institutions. Thus given that other agencies are competing for funds from the sponsors of UMA, it behooves UMA to be prepared to defend its program in terms of distinction, efficiency, and benefits. Comparisons will be made among competing investments; data and information generated by UMA could be influential in those comparisons.

Second, SUN (and other affiliates of UMA) will be required to seek some level of state support during the next five years. This, in turn, means competition with other state agencies for funding; it also means that for some state agencies SUN will be a threat to their funding base. Furthermore, SUN may be a threat to the "market" which existing institutions serve. It would be to SUN's advantage if it could demonstrate: (a) that benefits accrue to other agencies as a result of SUN's operation; (b) that its clientele are not being served by existing programs; (c) that definite individual and community benefits result from SUN; and (d) that where credit is offered, courses are academically sound and produce the intended results. The climate for SUN will be influenced by other institutions in the state, and by how the state legislature receives SUN. Studies which address the concerns of both advocates and opponents of SUN would be beneficial in developing a positive climate for the growth of SUN.

Third, the students of SUN (and other state affiliates of UMA) must make judgments about the worth of obtaining educational experiences and services which are offered. Given competing demands, it must be clear that SUN is an opportunity which addresses the interests of its target population. Information about how SUN, and other state affiliates of UMA, help students meet their personal goals would be advantageous. It would also be helpful to document how SUN is responsive to the needs of the population which it serves, and what those needs are. The tuition rates for SUN courses must also be compatible with students' willingness and capabilities of paying. One of the premises of the UMA/SUN program is that sufficiently large numbers of student-clients will create economies of scale. Both the number of students and the rate of tuition will have impact on the economic viability of SUN.

Fourth, the top level decision makers in UMA/SUN require timely and trustworthy information for internal decisions. For example, decisions must be made about the acquisition of courseware, either to be modified or accepted without change. Cost-effectiveness studies could help to identify results obtained in previous uses of a course, as well as initial and long-range cost implications of courses acquired for use in UMA states. A second kind of internal decision is the recommendation to the Academic Council for a course to be developed or acquired. In this case not only the potential "market" for the course, but also projected course cost and effectiveness data, would be beneficial. Also, given that some flexibility exists in setting tuition rates, cost studies could help to construct demand (enrollment) curves which relate tuition to enrollment patterns under given conditions of course content, quality, and/or services.

Fifth, staff in UMA/SUN (e.g., instructional designers, producers, learning center coordinators) make decisions about specific content, instructional strategies, uses of media, course structure, and student services. If course cost and/or effectiveness data were available at the appropriate time, staff could use such data as a resource in their decisions.

Although these five reasons serve as support for the conduct of cost-effectiveness studies, the undertaking of such studies must also be judged in relation to competing activities within the organization. Each office within UMA/SUN has ongoing activities slated for next year, to which added cost-effectiveness studies might be a burden. Furthermore, it is not entirely clear what the results of cost-effectiveness studies would be (in terms of specific data), or how that data would be used in the decision making process. In short, there are some unknowns about how costly, effective, and beneficial cost-effectiveness studies might be. However, for the reasons given above, it is recommended that UMA/SUN undertake a few strategic studies which over time could address the issues raised in this report.

What Kinds of Cost-Effectiveness Studies Should be Undertaken?

It is recommended that the criteria for selecting cost-effectiveness studies to be undertaken by UMA/SUN recognize major areas of vulnerability to the organization, and honor a proactive rather than reactive approach to such studies.

One major source of vulnerability for UMA/SUN is its dependence on external funding during the five year development period. Although projections have been made that operational aspects of UMA and affiliates could be self-supporting after the five year development period, there is no guarantee that outside funding will be extended throughout the first five years. To increase the probability that outside funding is obtained over the developmental period, an ongoing dialogue and information flow should continue with present and potential funders, as well as institutional leaders. The recipients of information should include program directors in NIE, other governmental offices, and foundations; state legislatures and their committees; and heads of existing institutions. The objective of such dialogue and information flow would be threefold. One objective would be to adequately and accurately represent the status of UMA and its affiliates. A second objective would be to address issues of importance to decision makers in outside agencies, including issues such as who UMA and its affiliates serve and who they do not serve, how UMA and affiliates overlap with and are distinct from existing programs, projected plans over the next five years, the projected impact on existing institutions, and contributions which UMA and affiliates are making to existing institutions, communities, and individuals. A third objective would be to carefully identify the support base which UMA and affiliates require over the next five years, the rationale for it, and the plans for financing UMA and affiliates after the five year developmental period.

Internal to the organization, one major source of vulnerability is the lack of communication and coordination across offices. Quality, or effectiveness, is not a univariate concept; neither is cost. All of the offices and individuals in UMA/SUN contribute to both the quality and cost of the enterprise. To the extent that cost and effectiveness information can be used in decisions to select particular instructional strategies, media, and intended outcomes, the organization should be less vulnerable from within.

To address these concerns, it is recommended that the following cost-effectiveness analysis activities be undertaken by UMA/SUN over the next five years. The activities are ordered with respect to (1) activities which should become a part of routine data collection; (2) activities which should be targeted for 1975 and beyond; and, (3) activities which go beyond strictly cost-effectiveness analysis, but which are important to consider in judging the impact and cost of the enterprise.

1. Activities which should become a part of routine data collection.

   a. Identify the potential (and actual) clientele of the open learning program and differentiate them, as appropriate, from the clientele of conventional programs.

b. Document referrals to and enrollments in existing programs which result from advisory services and/or course enrollments in SUN and other UMA affiliates.

c. Provide consulting services to existing programs to help them sharpen their own program's resources and goals, and document the effect of that consultation.

d. Share and compare information with institutions through WICHE, Empire State, BOU, and other open learning programs.

e. Assess courses to be acquired in terms of potential effectiveness and long-range cost implications.

2. Target activities for 1975-1979 (detailed).

a. Develop descriptive models which portray the costs and effectiveness of courses already delivered.

(1) Identify and describe per course/per student costs for Accounting I and Introductory Psychology in terms of: (a) design, production, research, evaluation, and delivery; and (b) media employed, i.e., television, text, study guide, newspaper, and audio tapes (Accounting I only).

(2) Identify and describe outcome measures for Accounting I and Introductory Psychology in terms of (a) unit test data; (b) unit evaluation data; (c) end-of-course evaluation data; and, (d) student interview data.

(3) Portray cost and outcomes data in a format conducive to cost-effectiveness analysis.

(4) Predict the costs and outcomes for the second offerings of Accounting I and Introductory Psychology.

b. Engage in an experimental study with the University of Nebraska at Lincoln (UNL) where Accounting I can be compared in cost and effectiveness to a UNL introductory accounting course on campus.

(1) Design research study so that proper interpretation can be made of differences in Accounting I and UNL conventional course which result in measured outcomes, including achievement, appeal, and application.

(2) Identify and describe costs associated with the experimental (SUN Accounting I) and control (UNL introductory accounting) courses, including all relevant assumptions.

(3) Describe in detail the experimental and control groups, as well as the process ("treatment") administered.

(4) Portray cost and outcomes data and present in a format conducive to cost-effectiveness analysis.

(5) Draw conclusions from the study, including the methodological and practical constraints and the value of the data to decision makers.

(6) Report findings of study to UMA/SUN and UNL parties.

c. Conduct a feasibility study to determine what information needs exist in course development and delivery and how data on either cost or effectiveness would make a difference.

(1) Interview development and delivery staff to identify specific decisions made in selecing (a) course goals; (b) instructional strategies; (c) media; (d) assessment procedures and instruments; and (e) services offered to students.

(2) Describe both actual and potential data used in specific development and delivery decisions.

(3) Identify and describe the constraints and capabilities which exist for development and delivery.

(4) Draw conclusions about the desirability and feasibility of providing cost and/or effectiveness to staff in the development and delivery of courseware and services.

(5) Identify at least one course to experiment with staff on the generation and use of cost-effectiveness data.

d. Document the costs of existing programs and the assumptions to be used in comparing conventional program costs with open learning program costs.

(1) Select at least three UMA/SUN courses (one UMA-developed, one UMA-adapted, one UMA-acquired) for cost comparisons with other institutions.

(2) Identify at least one each of the following institutions for cost comparisons with the above three courses: an open learning program (e.g., Empire State or the BOU); a 2-year community college; a 4-year college; a university.

(3) Describe assumptions for cost comparisons and analyze course costs by institution.

(4) Draw conclusions about the relative cost of UMA/SUN courses when compared with other institutions.

(5) Report findings of the study, as well as implications for the operation of UMA/SUN.

e. Analyze the cost and effectiveness data from approximately ten UMA/SUN courses in terms of goals, media, unintended consequences, and unanticipated results.

(1) Across the ten course contents, identify level of course goals to be realized (objectives) and identify course costs and effectiveness data by level of course objectives.

(2) Construct a typology of media employed across the ten courses and identify course costs and effectiveness data by types of media employed.

(3) For each of the ten courses, describe the unintended costs and/or effects of the course.

(4) For each of the ten courses, describe the unanticipated positive and negative results from the course.

(5) Portray the cost and effectiveness data across the ten courses in terms of goals, media, unintended consequences, and unanticipated results.

(6) Draw conclusions as appropriate from the comparisons.

f. Select at least one course in which to experiment with different media, and seek to determine the impact of those media on course costs and effectiveness.

(1) Develop one body of course content with specified goals, assessment procedures and student services, in at least three media combinations: (a) print only, (b) nonprint only, and (c) print and nonprint.

(2) Following rigorous experimental design procedures, randomly assign subjects (students) to each of the three experimental forms of the course. Also, employ a control group which is not subjected to any of the three treatments.

(3) Document course costs as well as outcomes, using the same assessment procedures.

(4) Portray the costs and outcomes data in a format conducive to cost-effectiveness analysis.

(5) Draw conclusions from the study and identify implications for media selection in the particular content area.

(6) Identify what generalizations, if any, apply to other content areas, course goals, and assessment procedures.

(7) Critique the worthwhileness of the study, including if additional inquiries of this type are productive.

3. Activities which go beyond cost-effectiveness analysis, but which are important to consider.

(a) Begin a baseline study of the impact of UMA/SUN on existing institutions, including impact on (1) student enrollments; (2) faculty; and (3) services and programs.

(b) Begin a baseline study of the impact of UMA/SUN on the communities in states in the region.

(c) Begin a study to project the need for postsecondary education in the states of the region, and identify where existing programs are in relation to that need, in both qualitative and quantitative terms.

(d) Define a plan for demonstrating the intended self-sufficiency of the UMA consortium, including what assumptions are made about that sufficiency.

(e) Gather market (clientele) information which identifies areas of need for educational experiences that do not exist, and estimate the number and judged quality of courses required to serve those needs. (Note: This activity would assume a targeted population like registered nurses, pesticide operators, etc.)

(f) Construct demand curves which show the optimal tuition rates for courses for which the tuition rate is flexible.

SUMMARY

The five approaches to course development identified under this work assignment give UMA a means of roughly predicting the costs of developing open learning courses of differing formulation, and the amount of time required to develop a given course. It must be emphasized, however, that these are rough estimates only: each course development project entails its own problems of content, treatment and format, and might involve a greater or lesser amount of time.

This assignment of average costs for the five approaches will also be useful to UMA in beginning studies of the effectiveness of UMA courses relative to the cost of their development. The plan for these studies is reflected in the agenda of specific activities to be undertaken, reported at the conclusion of this chapter. It is not the intent of these studies to identify any one of the five approaches as the most desirable; each is likely to have its own merits and disadvantages, in terms of both costs and effectiveness. Rather these studies will guide UMA in planning future course development efforts in terms of budgetary constraints and intended audience, and will serve to document a crucial aspect of UMA's experience in developing open learning courses.

These cost-effectiveness studies, however, are only a part of the larger context of analyzing the costs of the open learning system as a whole in relation to its social benefits. Preliminary measures taken towards a continuing analysis of the cost aspects of this larger context are related in Chapter IV.

CHAPTER III
ECONOMICS

WORK ASSIGNMENT #3

> Formulate a long-range regional consortium plan for, and conduct initial stages of, cost analysis and cost comparisons. These will relate to the system, the courseware, the market size and needs analysis, and the learning centers.

The purpose of developing a long-range plan for cost analysis and comparison is to provide a means of predicting the degree of UMA's economic viability. Such a cost analysis plan would be used for a detailed computation of the operating costs of the program, and for internal comparison of these operational costs among departments, comparison of the cost of different types of course development, etc. The plan for cost comparison would provide a basis for detailed comparisons of the operating costs of UMA/SUN with those of traditional educational entities, as well as with those of other nontraditional systems, such as the Open University of the United Kingdom. Comparisons of this kind are of particular interest to many policy makers. Detailed cost analyses are to be undertaken by UMA during its five-year developmental period.

Another important outcome of these analyses is to be a continuing assessment of the relationship of costs to benefits in the UMA operation. Such relationships must take into account market size, effectiveness of courses, perceived personal and social benefits, and instructional support systems. Cost benefit analysis is not a simple task, but one that is critical to a long-term assessment of UMA and other nontraditional programs.

This chapter contains three sections. The first section contains a summary of major outcomes resulting from work on this assignment. The second section outlines a cash flow model developed by UMA during 1974. Finally, a summary of work on economic modeling is provided.

SUMMARY OF MAJOR OUTCOMES

- A cash flow model was developed detailing UMA income and expenditure projections over a five-year period of operations.
- An economic analysis of UMA/SUN was prepared.

CASH FLOW MODEL

The cash flow model developed by UMA during 1974 includes an analysis of the fiscal resources available to the project as balanced against all costs to be incurred in its operation. In this way it is possible to posit the conditions under which the project will remain solvent, the conditions under which self-sufficiency may be attained at the end of the five-year period, and the costs of the project relative to other educational endeavors, both innovative and traditional.

In general, the operational costs of UMA and the model state delivery system (SUN) were apportioned among three basic cost centers: administrative, course development, and delivery. Each of the cost centers was divided into subcategories (administration into departments, course development into different types of courses to be developed, delivery into subfunctions), and a set of assumptions was developed about each subcategory which expressed the primary variables in system operation which would affect costs in that subcategory. Detailed records were kept of all current operational costs to serve as a basis for predicting future costs (expressed in terms of 1974 dollars in the analyses). Through these procedures, a formula was derived to predict all expenses associated with the operations of UMA and SUN on a five-year basis. The cost plan developed through use of this formula was subjected to staff and consultant review, assumptions were altered as necessary, and subsequent drafts of the plan were made, reviewed, and revised.

If UMA's five-year cash flow assumptions and projections were realized, all costs of the regional consortium's administration and central operations, including course revision, could be made self-sufficient after five-year seed funding by NIE or other agencies. Because of the relatively high capital investment cost of new course development, it is anticipated that future course origination beyond the five years will continue to require certain external subsidies. Should requested levels of funding not be forthcoming, an obvious place to effect reductions will be in course development, thus limiting in the five-year time frame some of the system's experimental aims.

More specifically, the cash flow model specified a number of assumptions underlying cost and income projections, set forth rather detailed cost centers, and offered specific cost projections for a five year period. The assumptions include the following:

Cost Centers

Expenditure object numbers are those presently used by the University of Nebraska. The cost centers for UMA are two: Administration and Course Development. The three cost centers for SUN are: General Administration, Academic Services, and Student Services.

Tuition Income

In keeping with the plan to charge varying tuition rates dependent upon factors such as type of course and ability of the student to pay, several tuition rates will be employed. For the purpose of this budget projection, tuition income was calculated at an average of $18 per credit hour for the first six months of 1975 and an average of $20 per credit hour thereafter. The audit rate is calculated at 75% of the regular tuition rate; it was also assumed that non-credit course income will average $25 per course. Student credit hours were calculated by estimating the number of students who would take courses using a formula based on market surveys of adult interest in open learning courses. It was also assumed that 60% of th. adult learners would enroll for credit, and 40% would addit the course on a not-for-credit basis.

Materials Fees

It is assumed that course materials will be charged to students at SUN/UMA cost. Great Plains National will distribute these materials and a modest handling charge will be included in the total kit charge made of students. It is assumed also that materials costs will vary from course to course. Total course materials costs are listed in projected expenditures at the same amount as student fees in projected income.

State Appropriation

The present assumption is that SUN will receive $1.25 of state appropriation for each dollar of tuition including audit income collected. This income is expected to start with the fiscal year 1975-76.

Learning Centers

The SUN plan calls for 18 learning centers to be strategically located throughout Nebraska. It is assumed that each learning center will have a coordinator and an assistant. It is also assumed that these centers will operate in cooperation with other postsecondary institutions within the state, thus affording certain cost sharing. Each learning center will have a full set of course materials, including audio and video cassettes where a part of the course.

Faculty and Graduate Assistants

Operating costs for faculty and graduate assistants included in the course delivery system were calculated by assuming each course would require a .75 FTE faculty member and a graduate assistant at .5 FTE.

Telephone

The plan calls for use of WATS lines for communication between faculty and students in Nebraska. It was assumed that lines would be added as numbers of students increase in order to facilitate communication by minimizing busy signals.

Lease Income

It was assumed that courses will be leased throughout the country. Total lease income is estimated on the basis that UMA will average $3,000 on each course lease. Actual lease agreements will vary according to different circumstances, but the average is projected at $3,000.

Course Development

A basic assumption is that UMA will develop 11 courses per year, and that 55 courses will be produced during the five-year period. The full production cost of each course is included in the year that production is scheduled to start. This same assumption applies to course revision costs.

Projected Support From UMA Institutions

The plan assumes an "in-kind" contribution in 1975 of $5,000 per UMA state, and an additional $20,000 for delivery system planning in states other than Nebraska. After 1975, the plan calls for support either in the form of participant contributions, formula support, or course lease arrangements or agreements, increasing each year and leveling off in 1980 at $150,000 per state. Members of UMA making participant contributions will be exempt from lease charges with the payment of their annual contribution.

Constant Dollars

The 5 year budget was built by presenting personnel costs in terms of 1974 dollars and by making on "formula" increase for each department. Application of the formula to personnel costs results in all operating expenses being stated in 1975 dollars. No attempt was made to adjust for inflation over the 5 year period. The formula increases for 1975 are based on actual salary increases approved for University of Nebraska employees for the July 1, 1974 - June 30, 1975 fiscal period.

Given these assumptions, income and expenses for UMA and for SUN, as a model state delivery system, were projected for a five year period. Table 4 contains the overall projected cash budget income for UMA for 1975-1979. Table 5 displays projected UMA expenditures during the same period. Table 6 contains income and expense projections for SUN during 1975-79.

The key to the validity of the UMA cash flow model is the number of courses to be developed each year, which in turn determines the amount of lease income derived. In SUN or other delivery systems, the number of students enrolled is dependent on the number of courses available, which fundamentally ties the state

Table 4. UMA projected cash budget income, 1975-1979

DESCRIPTION	1975	1976	1977	1978	1979
Federal Grants					
NIH	$3,582,200	$2,996,600	$2,785,300	$2,537,800	$1,833,600
Other	578,400	520,000	520,000	520,000	520,000
Private Grants	300,000	300,000	300,000	300,000	300,000
Lease Income	60,000	390,000	720,000	1,050,000	1,380,000
Membership Contribution	105,000	250,000	375,000	500,000	625,000
	$4,625,600	$4,456,600	$4,700,300	$4,907,800	$4,658,600

Table 5. UMA projected expenses 1975-1979

DESCRIPTION	1975	1976	1977	1978	1979
ADMINISTRATION					
General Administration	$ 427,200	$ 458,600	$ 450,200	$ 439,800	$ 429,200
Academic Administration	600,100	436,400	387,000	351,300	301,900
Public Affairs and Information Services	81,000	80,400	96,400	95,600	96,600
Course Acquisition	50,300	62,700	61,000	60,600	61,300
Production Services	180,400	193,900	194,500	193,900	194,500
Research and Evaluation	299,600	323,500	322,700	322,100	322,700
Instructional Design	92,300	86,500	87,100	86,500	87,100
TOTAL ADMINISTRATION COSTS	$1,730,900	$1,642,000	$1,598.900	$1,549,800	$1,493,300
COURSE DEVELOPMENT					
Course Development Costs	$2,781,000	$2,728,200	$2,740,800	$2,952,900	$2,740,800
Course Revision Costs	113,700	86,400	360,600	405,100	424,500
TOTAL COURSE DEVELOPMENT COSTS	$2,894,700	$2,814,600	$3,101,400	$3,358,000	$3,165,300
	$4,625,600	$4,456,600	$4,700,300	$4,907,800	$4,658,600

Table 6. Projected cash income and expenses for a model state delivery system (SUN), 1975-1979.

Cash Budget Income

DESCRIPTION	1975	1976	1977	1978	1979
Tuition	$ 253,800	$ 335,700	$ 434,700	$ 549,000	$ 737,800
Materials	121,800	152,300	197,300	251,000	337,300
State Appropriation	158,600	419,600	543,400	686,300	922,200
Private Grants and Other Income	247,700	245,800	150,400	21,000	-0-
	$ 781,900	$1,153,400	$1,325,800	$1,507,300	$1,997,300

Cash Budget Expenses

	1975	1976	1977	1978	1979
DELIVERY COSTS					
General Administration	$ 94,100	$ 109,000	$ 112,000	$ 116,600	$ 140,000
Academic Services	636,700	958,700	1,106,700	1,281,300	1,673,600
Student Services	51,100	85,700	107,100	109,400	146,900
TOTAL DELIVERY COSTS	$ 781,900	$1,153,400	$1,325,800	$1,507,300	$1,960,500

delivery systems into the productiveness of UMA.

The value of any model lies in its predictive or explanatory power. The cash flow model outlined above is useful as a checkpoint for financial reality. It is unlikely that actual operation will follow the model exactly. (Note: for a more detailed account of the five-year cash flow model, see Appendix III of this report.)

ECONOMIC MODEL

In an effort to broaden its inquiry into the fiscal viability of the regional consortium idea, UMA commissioned The Esmee Fairbairn Economic Research Center (TEFERC) to develop an economic model for UMA and its associated delivery systems. The basic intent of such an exercise is to examine the conditions whereby UMA might move toward maximization of net social product, defined by TEFERC as "the difference between the total benefits derived by society and the total costs borne by society as a consequence of the OLS's (Open Learning System) operations." Lumsden and Attiyeh, authors of the study (See Appendix II B for the complete study), recognized the interrelationships of variables as in the cash flow model, and made the following observation:

> Note that maximization of net social product is not the same as, and does not necessarily imply, maximization of student enrollment in the OLS, or maximization of the quality of its programs, or minimization of the OLS's financial deficit. However, a decision which maximizes net social product will have definite implications for the optimal enrollment in the OLS, the optimal quality of its programs and the optimal government subsidy. Given this objective, the OLS planners need to determine how benefits and costs can be measured and also how benefits and costs will be affected by changes in decision variables such as the number and quality of courses offered. Finally, any limitations on student enrollment, tuition, and fees, financial deficit, etc., which constrain planners in their choice of values for decision variables must be taken into account.

The TEFERC report explored the relationship between enrollments and social benefits, and described procedures for defining and measuring social benefit and social cost, thus providing a general cost-benefit framework for looking at UMA and its delivery systems. Such a framework, of course, assumes the desirability of benefits outweighing costs. To arrive at such a condition clearly requires decisions about number of courses to be produced, academic and production quality to be achieved, and enrollments to be obtained. Of central concern is the perceived value of the courses to the student, for such perceived value will influence the willingness of a student to pay for participation in the course. The authors of the report point out that attaining maximum standards of excellence may not always optimize cost-benefit ratios.

UMA supplied TEFERC with income and expense figures, according to the same cost centers, subcategories and assumptions used in developing the cash flow model described above. Using these data, Lumsden and Attiyeh performed a number of analyses designed to project per student development and delivery costs of courses available, number of learning centers operating, etc. Some of these analyses are presented below.

Average production cost per student

Using the projected budgets for the five approaches to courseware development described in Table 3 (p. 31), and assuming the development of 48 degree-equivalent courses over five years (a non-degree course was computed to be equivalent to 4/9 of a degree course in terms of both educational output and cost), average production costs per student were projected. Table 7 shows the results of this analysis, assuming different numbers of delivery systems adopting courses.

Table 7. Average production cost per student degree equivalent course*

Average number of delivery system adoptions per course	Average enrollment per course per delivery system				
	100	200	300	500	1000
1	880	440	294	176	88
2	440	220	147	88	44
3	294	147	98	59	29
4	220	110	73	44	22
5	176	88	59	35	18
6	147	73	49	29	15
7	126	63	42	25	13
8	110	55	37	22	11

*Assumes course type mix as: A) 5; B) 8.3; C) 4.4; D) 8.3; E) 21.7.

Average Delivery Cost per Student

Using data supplied on delivery system costs, average delivery cost per student was computed. Table 8 contains this analysis.

Table 8. Average Delivery Cost per Student per Degree Equivalent Course

Number of courses offered by delivery system.	Number of learning centers	Average enrollment per course				
		100	200	300	500	1000
24	25	497	276	201	143	99
24	0	158	109	91	77	66
(N) Total enrollment:		(2,400)	(4,800)	(7,200)	(12,000)	(24,000)
48	25	308	182	140	106	80
48	0	142	98	84	72	64
(N) Total enrollment:		(4,800)	(9,600)	(14,400)	(24,000)	(48,000)

As Table 8 indicates, both the number of learning centers and the availability of courses significantly influence per student delivery costs. What is not clear, however, is the actual impact of the existence of learning centers on how many people decide to enroll in courses.

Comparative Costs

Most people who inquire about the UMA program will ask about the costs of UMA compared to other programs. That is, does it cost more or less to deliver equivalent educational services via UMA than by other means?

Such comparisons must be approached with considerable caution. For example, it is difficult to get agreement on what things to consider as a cost in any given program. What is considered a cost in one setting is not in another. There is also a problem in determining equivalency of service provided.

Lumsden and Attiyeh sought to compare average cost per course for UMA and the Open University of the United Kingdom (at which, incidentally, Lumsden and Attiyeh had previously conducted some cost studies) given equivalent enrollments. The comparison was made with a host of qualifying statements (See the full TEFERC report in Appendix #B), and the results were displayed, as in Table 9. The data indicate a very favorable comparison between these two programs.

The TEFERC report also compared UMA per student costs to the average instructional costs per student reported for different types of conventional institutions. These costs are displayed in Table 10. Again, UMA appears to compare favorably.

Table 9. Average Cost per Student Course: UMA and Open University.

Enrollment*	OU	UMA-SUN
50,000	172	175
40,000	199	205
30,000	243	255
20,000	333	355

*Enrollment assumptions are for the entire OLS.

Table 10. Average Instructional Costs by Type of Institution

	All Undergraduate Courses	Lower Division Courses
Universities	$ 263	$ 181
4-Year Colleges	224	170
2-Year Colleges	165	165
Liberal Arts Colleges	246	246
All Public Institutions	229	175

Determining costs is only half the problem in working toward statements of cost-benefit. The TEFERC report also addressed the question of benefit. This discussion centered about two topics: the demand for open learning, and the calculation of total benefits. Both topics were treated in general economic terms, not necessarily directed specifically at UMA. Again, the reader interested in the specifics of this discussion should refer to the TEFERC report in Appendix II B. Of general interest here, however, is Table 11, a hypothetical benefit and cost comparison. While the data do build on projected figures for UMA, the table is intersting more for the categories included than for what it says specifically about UMA. The report offers this commentary on the table:

> In this hypothetical example, both total benefits and total cost increase with the number of learning centers, although not at the same rate. In all three cases, total benefits exceed total cost. In comparing case 2 and case 1, the increase in benefits from increasing the number of learning centers from 0 to 10 exceeds the increase in costs. In comparing case 2 and case 3, the increase in benefits from increasing the number of learning centers from 10 to 25 falls short of the increase in costs. Consequently, of the three alternatives, case 2 has the largest net social product, as can be seen in the last line of Table 11.

Table 11. Hypothetical Benefit and Cost Comparison.

	Case 1	Case 2	Case 3
Courses Offered	48	48	48
Learning centers	0	10	25
Parameter a	200	250	300
Parameter b	-200	-250	-300
Optimal enrollment	13,400	14,400	15,100
Average Social Benefit	128	153	178
Average Social Cost[1]	126	143	171
Total Social Benefit[2]	1,715,200	2,203,200	2,687,800
Total Social Cost[2]	1,688,400	2,059,200	2,582,100
Net Social Product[2]	26,800	144,000	105,700

[1] Assuming 8 adoptions per UMA course

[2] Per delivery system

The table is included here merely to show one way of looking at the idea of social benefit and social cost.

Both the economic and cash flow modeling exercises have been useful to a better understanding of UMA. The greatest value of the models is not in their prescriptive qualities, for both are too tenuous for that. Rather, the value lies in presenting graphically the complex web of interrelationships that impact upon the economics of UMA. The models do provide some insight into what conditions apparently must exist if economic viability is to be a reality.

The utility of these models as predictions of the likely success of UMA, however, is limited. All of the figures, all the comparisons, presume the integrity of assumptions and projections. Little experience exists to verify either the assumptions or the projections. Lumsden and Attiyeh put the point nicely in their reflections on demand:

> While there exists some evidence which suggests that the demand for high quality open learning may be substantial, the unfortunate fact is that the information required to estimate with any confidence the demand function for enrollment in SUN and other open learning delivery systems is not available. The experience with other non-conventional educational institutions in the United States is so recent and poorly documented that it provides no practical guidance. The data for the British Open University, because of the substantial differences between the higher education industries in the U.S. and U.K., are not applicable to the SUN situation. And, the data from the market research undertaken for SUN leaves too many questions unanswered to provide a sound basis for making demand projections.

Therefore, while UMA during 1974 did take steps toward trying to understand the economics of open learning, much more must be done. The most critical dimension now appears to be time--experience will fill in some of the blanks in our present understanding.

SUMMARY

The cash flow and the economic model discussed in this chapter represent the initial stages of cost analysis and cost comparison called for in the work assignment. These models form a basis for UMA's ongoing investigation of costs in the open learning system, which forms an important part of the five-year plan of operations discussed in Chapter IV of this report. The assumptions upon which these models are based, and the cost figures derived from the assumptions, will be tested in actual operation of the system, and continually revised in the light of experience gained through such operations.

CHAPTER IV
FIVE YEAR PLAN OF OPERATIONS

WORK ASSIGNMENT #4

Develop an initial five-year plan of operations and a five-year expenditure and income projection.

The development of a program as potentially large and complex as UMA requires a great deal of thoughtful planning. No plan can guarantee success; a carefully developed plan will, however, increase probabilities that important variables in the success of an enterprise will have, at the very least, been considered.

This work assignment calls for the development of a five-year operational plan for UMA and its associated delivery systems. Such a plan should take into account all aspects of the proposed program, including an analysis of probable income and expenditures. The intent of such a plan is to guide and inform policy and operational decisions, both within and without UMA. A good plan will portray intentions such that these intentions can be scrutinized and clarified.

The UMA staff approached this planning task by describing in as much detail as possible what UMA might look like in 1980, and then identifying tasks that must be accomplished during the next five years, if that intended status were to be reached. The 1980 status scenario is derived from an examination of the goals and purposes of UMA and open learning in general (see Chapter I), the proposed target population, and best estimates of what kind of program would most adequately serve these purposes and people.

Work on this assignment during 1974 can be grouped into two broad categories. The first category includes those activities directed specifically at planning the actual operations of the UMA system. These activities include: defining goals and objectives, determining what specific tasks must be accomplished, and describing organizational arrangements, including staffing patterns, most likely to lead to successful accomplishment of the goals.

The second category has to do with fiscal considerations. Since the specifics of the proposed five year cash flow and economic model have been previously described in Chapter III and Appendix III, this chapter will not repeat those specifics. In this chapter, however, one important aspect of the financial plan of UMA is discussed, namely the issue of grant-related and copyright income.

This chapter, then, is divided into three sections. The first section briefly summarizes the major outcomes resulting from work on this assignment. The next section includes information on UMA's proposed five year plan of operations. The final section focuses upon grant-related and copyright income.

Plans are targets. They suggest, with varying degrees of specificity, directions an organization might pursue. But good plans are sensitive to changing priorities, and to the wisdom of experience. Plans for UMA, as developed during 1974, will hopefully achieve an appropriate flexibility and sensitivity, while providing operational policy guidelines.

SUMMARY OF MAJOR OUTCOMES

- A five year plan of operations was developed, including an analysis of goals, specification of tasks to be performed, and description of organizational arrangements.

- A statement of income and expense projections over five years was developed (See Chapter III).

- A statement on grant-related and copyright income was developed.

PLAN OF OPERATIONS

As suggested above, a description of the UMA plan of operations devised during 1974 can be divided into goals and objectives, tasks, and organizational arrangements. This section is divided in that manner with the exception that goals and objectives are discussed together with tasks, to provide easier reference. The plan, as presented herein, was reviewed by UMA staff, the Academic Council, and the Board of Trustees, as well as by outside consultants.

Goals, Objectives, and Tasks

Chapter I describes the general goals and purposes of open learning programs, and of UMA in particular. In developing the five year plan, UMA sought to define more specifically the operational implications of that goal statement.

UMA and associated delivery systems operations were divided into four areas: delivery of educational opportunities; curriculum planning; course development; and consortium planning and development. This section briefly describes the intended status of UMA in 1980 with respect to each area. After a description of intended status, a summary of tasks to be performed is given. For a more complete description of each task, see Appendix IV.

Delivery. By 1980, statewide delivery systems will be fully operational in the UMA states, making available to interested learners a range of learning opportunities, including UMA-developed courseware and local and regional resources in cooperation with existing institutions. Thus each system will expand the educational opportunities available to the learner in his own environment.

Each system will use a variety of mechanisms to provide services to learners necessary to realize the commitment to meet the learner where he or she is educationally. For example, in Nebraska a network of learning centers is planned throughout the state. In such learning centers, learners will be able to receive advice and counsel as to how best to use all these learning opportunities to achieve personal or professional goals; they will have access to all UMA course materials so that they can review or work at an accelerated pace, thus being freed even further from time constraints; they will be helped to overcome any initial reluctance to attempt postsecondary education and will be assisted in the design of learning programs appropriate to their educational background, level and abilities.

The learning centers will be staffed with persons sensitive to individual differences and knowledgeable about adult learning and about local educational resources. Thus, it will be necessary for UMA, by 1980, to have refined means of selecting and training those staff members.

By 1980, the UMA Office of Research and Evaluation, working with the individual state delivery systems, will have devised effective means of obtaining information about and feedback from learners. This information will be used in both the planning and modification of delivery system functions, and will also be used by UMA in curricular planning, course development, and for the advancement of general knowledge about adult learning and social changes brought about by extension of the educational franchise.

Fundamentally, from the point of view of the learner, the delivery systems will by 1980 be a responsive, person-oriented way in which the learner can be helped to design his own path to a postsecondary educational goal. SUN and the other delivery systems in other UMA states will serve an important clearinghouse function, linking learners with the resources and help they need to achieve their goals and objectives. While UMA-developed courses will certainly be important resources in this linkage, other resources will be sought and used as needed.

Tasks to be performed during the next five years, to reach these delivery goals, include:

- Examine effectiveness of management and procedures in the open learning delivery systems.
- Determine the effectiveness of learning centers.
- Develop effective means for training faculty and learning center staff.
- Determine how learner achievement in open learning programs compares with learner achievement in comparable programs in traditional settings.
- Study reasons for completion and non-completion of open learning courses and programs.
- Assist states associated with UMA to establish coordinated state delivery systems.

Curriculum Planning. By 1980, UMA will have planned and developed curricula (i.e., patterns of educational opportunities for various target populations) that both recognize and honor the characteristics of an open learning system. Those curricula will affirm that one of the major purposes of postsecondary education is to contribute to the self-development of individuals, so as to foster advancement of a society of people who are able to lead rich, full lives. The curricula will thus be particularly sensitive to the differing needs and hopes of a range of kinds of people. This attention to individual people and groups will not be simply rhetorical, but will be reflected in the courses and other educational experiences created, and in the way those experiences are made available to people. More importantly, learners will participate in curriculum development and decision-making by providing continuing feedback to course development teams, and by contributing to the deliberations of curriculum planners.

While responding to the needs of individuals as individuals, the curricula will also recognize the complex interrelationships that constitute the society in which individuals live. Therefore, the curricula will contain experiences designed to increase the capacity of individuals to function as citizens in democratic government by giving them the investigative tools and by enhancing the curiosity that is so important to participation in matters of collective policy. One of the characteristics of UMA curricula will be a commitment to fostering a reflective quality among those who engage in the UMA program.

In addition, the patterns of educational opportunities created by 1980 will recognize that individuals must also develop skills that will enable them to be employed at a variety of kinds of occupations. UMA curricula will strike an appropriate balance between programs designed for specific career training or retraining, a liberal arts education, or personal enrichment. This balance will have been determined by experimental offerings designed for various target audiences to test demand, costs, effectiveness, and need for open learning.

At a more specific level: By 1980, UMA will have the experience necessary to more carefully define the kinds of people for whom the program is designed. UMA cannot be all things to all people; UMA's decisions as to which groups or individuals receive priority attention will have been refined on the basis of experience. Within five years, UMA will be able to describe comprehensively who has participated in UMA programs, and the extent to which UMA is meeting expectations. These data will be used to guide ongoing planning and development decisions.

By 1980, UMA will know a great deal more about how adults learn. Research on learning will have been conducted, and the results used to assist in curriculum planning decisions. UMA will have some insight into how curricula can be designed to be responsive to varied and changing learner needs and expectations.

In addition, by 1980 UMA will have assisted individual states to establish delivery systems that are most suitable for achieving the goals of UMA's curricular philosophy. The feedback from those delivery systems will, in turn, assist UMA in making course selections in line with the various curricula developed to address target audiences.

Tasks to be performed during the next five years, to reach these curriculum planning goals, include:

- Determine who UMA should and does serve.
- Determine the conception or theory of curriculum that will guide UMA curriculum planning and development.
- Document as completely as possible what is presently known about how adults learn, and contribute to an

expansion of that knowledge throughtful research and evaluation.

- Determine the extent to which UMA curricula, and the curricular planning process, are able to respond to the needs, interests and expectations of learners.

Course Development. By 1980, UMA will have created or acquired a minimum of 55 courses and will have made those courses available to individual state delivery systems. Courses developed or acquired by UMA will be distinguished by their commitment to flexible use by students, putting into practice the commitment to try to meet individual learner needs, interests, and expectations. In addition, these courses will be viewed as one major component of the overall resources available to learners in any given state. It will be recognized that the services provided by state delivery systems include more than the delivery of the courses created or acquired by UMA, but certainly those courses will be an important aspect of overall state educational environments.

By 1980, UMA will have catalogued and evaluated relevant open learning courseware existing throughout the world. The course evaluation and acquisition procedure developed in 1974 will have been thoroughly tested, to insure that UMA selects from existing course materials those most likely to contribute to the goals of UMA, of state delivery systems, and of individual learners. UMA will have determined the most cost-effective means of acquiring and adapting a variety of kinds of existing courseware, and will have made available both details of the acquisition and evaluation process and data concerning problems associated with adaptation of courses to other open learning systems or traditional institutions interested in acquiring and adapting courses, including courses developed by UMA.

The instructional development process utilized by UMA to create its own courses will have been studied and refined by 1980. Alternative design and production approaches will have been tried, and guidelines developed as to the most effective means of creating various kinds of courses. For example, an analysis of the course team structure will have been conducted over the five-year period, leading to generalizable observations as to the structure and internal management procedures that seem to work best.

UMA will have experimented with alternative means of conducting formative evaluations in support of the course development efforts, and will have selected particular procedures that provide proven useful information to designers, producers, and other interested people. In addition, special attention will have been paid to the relative effectiveness of various kinds of media for various kinds of instructional purposes, and some media selection guidelines, based on both theory and practice, will have been developed.

By 1980, UMA will have gathered considerable data on the extent to which UMA courses meet the needs, interests, and expectations of individual learners and target groups for which courses have been developed. These data will have been consistently used to aid in course development processes and will have been made available to other interested agencies.

Finally, UMA will have engaged systematically in a number of studies designed to shed light on the costs and effectiveness of various kinds of courses. As a result of these studies, better decisions about how to invest resources available for course development will be possible.

Included in these studies is the difficult questions of how to define differences among courses, and how to ascribe differing outcomes of different causes. These studies will in no way be completed by 1980, but initial generalizable cost-effectiveness data will have been generated.

Tasks to be performed during the next five years, to reach these curriculum planning goals, include:

- Determine which courses or other learning experiences UMA should develop or acquire, and subsequently develop or acquire those courses.
- Determine how effective UMA courses are, and seek to determine what factors (format, pacing, content, readibility, etc.) tend to influence effectiveness with different kinds of learners.
- Determine relationships between costs and effectiveness.
- Determine the potentials and limitations of various media components, including television and computers, in UMA courses.
- Determine the most efficient ways to revise courses to prevent obsolescence and to reflect data on their effectiveness.
- Determine to what extent and in what ways courses can be designed to provide maximum flexibility in use.
- Determine and document the effectiveness of the UMA course development process, and refine that process as needed.
- Refine the procedures for evaluation, acquisition, and adaptation (if necessary) of open learning courseware produced by others.

Consortium Planning and Development

By 1980, the University of Mid-America (together with its associated state delivery systems) intends to be an operational entity which has the characteristics previously identified in Chapter I. UMA will be one aspect of a model regional open learning system which has come to an understanding of the needs and objectives of its audience and which uses that understanding in the planning of curricula, in courseware development, and in the delivery systems operated by the states associated with UMA. By 1980, each of these associated delivery systems will have been made fully operational, using local and regional resources in cooperation with existing state institutions to expand the educational opportunities available to the learner in his own environment.

Finally, by 1980, UMA and its delivery systems will be operating at a level of cost which is reasonable both to individuals and to society. Decisions based both on planning and on experience will have been made about the important questions of cost-effectiveness of the various compenents (delivery in all its forms, course development, etc.) of the system and adjustments made to improve the cost-effectiveness of the entire operation. A prime goal will be that the system is, by 1980, operationally viable without any continuing support from NIE.

Tasks to be performed during the next five years, to reach these consortium planning development goals, include:

- Determine whether UMA can and should grant credit and degrees.
- Develop the organizational structure and internal procedures of UMA to insure felxibility in meeting the institution's objectives.
- Determine the "steady-state" costs of the regional open learning system and compare these with costs of other open learning programs and traditional post-secondary institutions.

- Insure that the regional open learning system becomes "self-supporting" at the end of the five-year development period.

- Determine whether the consortium should be expanded beyond the present membership, and if so, how this is to be done.

- Determine how courseware developed by UMA can most effectively be exported, both within the UMA region and to delivery systems and institutions outside the region.

- Determine what social change is brought about by UMA and its associated delivery systems.

- Determine the impact of UMA and its associated delivery system on existing postsecondary institutions.

- Disseminate information about the model regional open learning system.

* * * * * * * * * * * *

These 27 tasks, then, represent UMA's intentions for work during the next five years. Two observations might be made about these tasks. First, the aggregate of these tasks, if performed successfully, would be a regional open learning program consonant with the goals outlined in Chapter I. What is not necessarily guaranteed by these tasks is that the system as developed would be economically feasible.

Second, it may be noted that many of these tasks, if performed satisfactorily, would not only contribute to the operations of UMA, but would yield information of major significance for other sectors of postsecondary education. There is, in short, a substantial commitment to producing experiential and/or generalizable data inherent in the tasks.

Organization

After considerable discussion among UMA staff, based on activities during 1974, an organizational plan was developed for the period of

February 1 - September 30, 1975. The plan will, of course, be subject to continual review throughout this period of pilot operations. Figure 6 contains the proposed UMA organizational chart. The dotted lines in the Figure which connect Great Plains National Instructional Television Library, the Nebraska Educational Telecommunications Center, the three Advisory Panels, and the four statewide delivery systems indicate the point in the organization at which primary contact with these affiliated groups will be made. For example, the Office of Production Control is responsible for production arrangements with the Educational Telecommunications Center and for printing and distribution done by Great Plains National; the Associate Vice President for Curriculum Planning and Delivery coordinates the development and operations of the delivery systems. The functions ascribed to each of the offices in UMA are described below.

Executive Vice President. The Executive Vice President reports to the President and the Board of Trustees of UMA, and is administratively responsible for the overall development and operation of UMA. The Executive Vice President has the following major responsibilities:

a. Works with the President and the UMA Trustees in formulating long range plans and programs.

b. Oversees the business affairs, development, academic affairs, legal, and public affairs functions of UMA.

c. Works closely with the Vice President for Academic Affairs in the supervision of academic planning, course development, research and evaluation activities, and delivery system planning.

d. Presents the UMA Trustees' recommendations concerning UMA's administrative affairs.

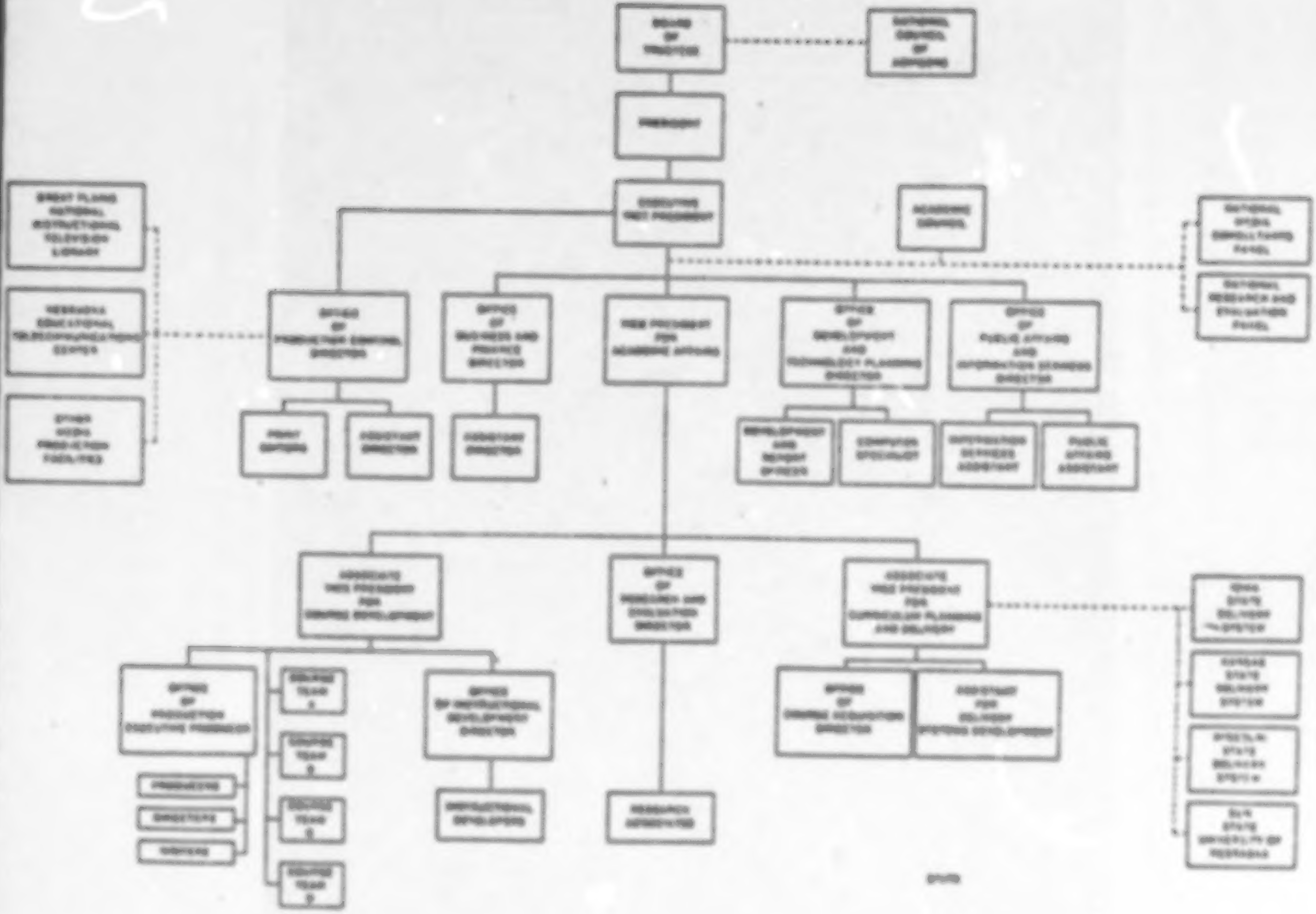


Figure 6. Table of Organization

e. Represents UMA to external funding agencies, provides direction to and approves all UMA proposals.

f. Works with the chief administrative officers of other related programs to develop cooperative arrangements and protocols.

g. Approves all UMA staff appointments.

h. Represents UMA to national organizations and agencies related to open learning.

i. Has overall responsibility for the day-to-day management of UMA, on behalf of the Trustees; interprets Trustee policy to the staff.

j. Oversees long range fiscal and other developmental planning, for UMA to insure success and guarantee financial self-sufficiency.

k. Oversees relationships with state delivery systems, and media production facilities; serves as chief contracting officer for UMA.

Office of Production Control. The Director of the Office of Production Control reports to the Executive Vice President and is responsible for all schedules for course development and production, and for delivery of master copies of all course materials to the Great Plains National Instructional Television Library. The office will:

a. Work with each course team manager and the Associate Vice President for Course Development to develop and initial schedule for each course design, production and completion.

b. Handle all course-related media production scheduling, coordinate service requests, and operational arrangements with the Nebraska Educational Telecommunications Center, with printers and with other outside service agencies.

c. Schedule and provide print editing, art and graphics, clearance and copyright services to course teams.

d. Approve any course changes in course production schedules recommended by the Associate Vice President.

e. Monitor, through the Associate Vice President for Course Development, all UMA course production progress, and provide periodic status reports to the Executive Vice President.

f. Receive for informational purposes reports from the Office of Public Affairs and Information Services about planned promotional production activities.

g. Serve as UMA liaison with the Great Plains National Instructional Television Library for scheduling delivery of the master course materials for reproduction and for distribution by Great Plains National Instructional Television Library to all course users.

Office of Business and Finance. The Office of Business and Finance will function in manner similar to, but enlarged upon, its 1974 operation. This office will manage UMA's finances, prepare budgets and cost and income projections, and manage UMA personnel.

Office of Development and Technology Planning. The Office of Development and Technology Planning is responsible for proposal development and report preparation and is active in the planning and development of new UMA projects. In the area of technology planning, this office has responsibilities for directing the study and analysis of new technological developments, including computers and satellites. This office administers special projects, such as the PLATO project, and coordinates planning related to technological applications. The development officer and the computer specialist report through this office, until additional computer personnel are on staff for assignment to particular areas. Until reassignment, the office works closely in computer matters with the Office of Instructional Development and with the Office of Business and Finance. Both in proposal development and communication about technological development, this office will work closely with the Vice President for Academic Affairs and the Academic Council.

Office of Public Affairs and Information Services. The Office of Public Affairs and Information Services will function essentially as it has in 1974, broadening its services and assuming coordination of visitor briefings and liaison with course teams for development of promotional materials.

Vice President for Academic Affairs. The Vice President for Academic Affairs reports to the Executive Vice President, and has overall responsibility for course development, curriculum planning, delivery coordination, and research and evaluation. The Vice President for Academic Affairs chairs the UMA Academic Council and is responsible for Council activities.

Associate Vice President for Curriculum Planning and Delivery. This position will have responsibility for the Office of Course Acquisitions and for UMA state delivery system planning/coordination. In addition, the Associate Vice President will serve on and work with the Academic Council. The Associate Vice President will, with the Vice President for Academic Affairs, have major responsibility in course planning, including the identification of resident content specialists, senior content advisory panel members, senior course advisors and topic panel members.

The regional delivery coordination will be conducted through an assistant for delivery systems development who, with the Associate Vice

President, will carry on orientation, coordination, training and consultation for developing statewide open learning delivery systems within the region. Additionally, the Associate Vice President is responsible for communication with and feedback from the individual state delivery system coordinators and for all contacts related to potential UMA expansion.

Office of Course Acquisition. The Office of Course Acquisition has the prime responsibility on behalf of UMA for identifying and overseeing evaluation of potential course acquisitions, and for negotiation and monitoring all course acquisition contracts, in cooperation with the Office of Business and Finance.

Associate Vice President for Course Development. All course development teams report to this Associate Vice President. In addition, the Director of the Office of Instructional Development and the Director of the Office of Production report to this position. The Associate Vice President is responsible for providing leadership in course development, maintaining liaison with curricular planning, and supervising and managing all UMA course-related design, development and production efforts.

Office of Instructional Development. The Office of Instructional Development is responsible for the recruitment, training, assignment and evaluation of instructional developers for course teams. In addition, the office reviews and modifies course developmental procedures, and works with the Associate Vice President for Curriculum Planning and Delivery in the planning phases of new courses. Further, this office develops and conducts general orientations for all UMA staff, as well as specialized orientations for all new course development team members.

Office of Production. This office is responsible for the recruitment, training, assignment and evaluation of all media producers, directors and writers, and provides talent coordination, music services and newspaper component writers for the course teams. Further, this office works with individual course teams to assist in maintaining overall media production quality, and provides assistance to the Associate Vice President for Curriculum Planning and Delivery in the planning phases of new courses.

Office of Research and Evaluation. This office will function essentially as in 1974, conducting certain course-related evaluations and overseeing a variety of research and evaluation assignments on behalf of this experimental regional open learning development and its statewide delivery systems. Research associates will be recruited and assigned to course teams on a schedule developed by the Director of Research and Evaluation. Because it relates to delivery and curricular planning as well as course development, this office reports directly to the Vice President for Academic Affairs.

GRANT-RELATED AND COPYRIGHT INCOME

Both the cash flow and the economic analyses of the regional open learning system (See Chapter III) have assumed retention by UMA of grant-related income (such as tuition) and of income derived from copyright of courseware and lease of such courseware outside the UMA region. The retention of such income is essential if the system is to achieve its experimental aims and reach economic self-sufficiency by the end of 1979.

During 1974, a statement on the topic of grant-related and copyright income was prepared by UMA lawyers. The statement points out the importance of a favorable NIE ruling on these matters. Excerpts from that statement follow:

> Crucial to the success of these (five year UMA) plans is a resolution of questions concerning use of the income stream that will be generated by UMA/SUN's operations. This statement will explore certain policies which must be considered in determining the uses of UMA's income stream in the context of UMA's experimental aims and structure.
>
> UMA believes that application of existing federal sharing policies for grant-related and copyright income will have a severe adverse affect on UMA's ability to achieve its experimental aims, without any off-setting benefits to the federal government or the public. If the decision is made to apply these sharing formulas, UMA will be required to effect a major reduction in its planned experimental activities.
>
> Existing Income Sharing Policies. It is UMA's understanding that the National Institute of Education provides grants to many projects which produce income from activities or products supported or funded by the grants. If the grantee has been given permission to copyright its

materials, any income produced from their lease or sale is termed royalty income. Otherwise, the money generated is classified as grant-related income. (A third category, investment income, is generated when a grantee invests its income and that investment produces additional income. UMA does not contemplate such investments, and considerations related to investment income will therefore not be explored in this discussion.)

Whether a grantee will be permitted to copyright its products is determined according to standards enunciated in NIE's "Grant Terms and Conditions" (June, 1974), and the Office of Education Copyright Guidelines, 35 Federal Register 7317 (1970). These guidelines permit the copyright of material developed in whole or part through government funding where "copyright protection may be desirable during development, or as an incentive to promote the effective dissemination of such materials." Upon a suitable showing by the grantee that the public interest would be served, NIE may grant permission to produce materials under copyright. Typically such permission is conditioned upon copyright for a five or ten year term instead of the statutory 28 year period, and the grantee is usually required to return to the federal government a certain portion of income produced from the sale of copyrighted material. The purpose of such sharing is to preclude the use of federal money by the grantee to achieve an unfair competitive advantage over others in the market place who may be producing competing materials without the aid of federal funds.

Where copyrighted material is involved, NIE may impose a sharing requirement as great as 50%. Often, however, the percentage is much less, typically 10%. The precise formula in each case is determined by an examination of the grant purposes, the grantee's position in the marketplace, the overall competitive situation in the relevant market, and other similar public interest factors.

NIE has not made such a determination with respect to SUN or UMA's production under copyright of any materials produced pursuant to the federal grant, and UMA has not heretofore requested that a formal decision be made as to whether sharing is appropriate to this case.

UMA further understands that income which is not produced by the sale or lease of copyrighted materials is grant-related income. Such income, according to NIE's grant terms and conditions, is either to be used to further the grant's purposes or is to be returned to the federal treasury. NIE typically imposes a 50% sharing formula in regard to this income, although this is not a hard-and-fast policy and cases of sharing above and below 50% exist.

Permission to produce copyrighted materials or to use a particular sharing formula is granted on a case-by-case basis. Furtherance of the particular grant's purposes and effectuating policies such as the maintenance of fair competition appear to be important guides used by NIE in determining the public interest.

UMA's Experimental Aims. Because application of federal copyright and revenue sharing policies depends to a considerable extent upon UMA's experimental purposes, UMA herewith submits its analysis of those functions which are essential to the project's success as an experiment in open learning. Throughout this discussion, "open learning" will be used as it has been defined elsewhere in this proposal, as a learner-oriented educational system that is accessible to a wide range of potential students.

In broad outline, UMA's two main goals are to determine experimentally whether postsecondary open learning is a workable concept in the United States, and to gather and evaluate in an operational setting, experimental data relevant to future use of open learning in this country. In deciding whether postsecondary open learning is a workable concept, UMA must be able to measure the demand for and benefits of open learning and discover whether the social costs of meeting that demand are acceptable. Although final decisions concerning acceptability are made by various funding sources, as the Ezmee Fairbairn Economic Analysis indicates, UMA believes it should be able to determine whether the range of funding requirements seems reasonable when measured against the funding requirements for alternative educational systems.

A number of goals are apparent within the broad category of gathering and evaluating experimental data relevant to future implementation of open learning. What potential learner populations ("target groups") will take advantage of open learning? What is the best method for designing open learning courses and how can new technology, such as television, best be used in open learning course development? What is the most efficient means for delivering open learning course materials in a system oriented towards learners rather than institutions? How should achievement in an open learning system be measured? How should the curriculum of an open learning system be built and what aims should it serve? Finally, what is the best way to operate open learning systems to achieve economic viability?

In addition to these experimental aims, any open learning system designed on a scale sufficient to provide the necessary experimental data must benefit the students who become a part of the experiment. Even though the system may be experimental, its education impact must be a prime concern, and the system must be carefully designed to preclude the possibility of introducing harmful educational experiences.

UMA's Structure. UMA is designed to fulfill the experimental aims delineated above. Even though these goals are experimental and data concerning them incomplete, enough is known about traditional higher education and about open learning systems to serve as a guide to UMA's design.

For example, we know that a relatively large student enrollment is necessary before reliable experimental data can be gathered about the demand for open learning, identification of various "target" learner populations, preferred delivery systems designs, and measurement of open learning achievement. Further, it is known that a relatively wide selection of courses is required to attract a sufficiently large student population for the experiment. An extensive range of courses also is necessary to test different courseware delivery systems, to evaluate the use of technological innovations in courseware development, and to utilize a sufficient variety of subject matter so that meaningful standards can be developed for measuring student achievement.

The necessity of offering a wide variety of courses to satisfy latent student demands deserves special emphasis. As explained elsewhere in this proposal, one of UMA's curricular goals is to provide to those learners who wish college credit the academic equivalent of university study without the necessity to confine such learners to a campus or a traditional timetable. Students who would be attracted to such an opportunity must expect to be able to continue their studies over a relatively broad range of subject matter until they have accumulated academic experiences analagous to those available at a conventional institution of higher learning. This requires the open learning system to provide courses in numerous well-established subject areas, some with a higher degree of difficulty than others. At the same time, UMA does not advocate concentrating too heavily on this target audience because of the danger of losing its "open" character and failing to serve other educational needs and other populations. Hence, UMA proposes also to offer courses for other target audiences, such as professionals or para-professionals who wish to supplement their skills, citizens who desire to learn simply for pleasure, and those who wish to increase their knowledge simply to enrich their lives.

In UMA's considered view the experiment therefore requires a certain depth and balance to succeed, for important experimental aims will be sacrificed if a sufficient scale of operations is not reached.

At this stage in its experience UMA does not claim to identify the precise point at which an experimental open learning system achieves this level of minimum acceptable productivity. However, some principles of system design are readily apparent which, if ignored, can only condemn the system to fall short of reasonable expectations.

Given the funding levels available, UMA's studies indicate that the experimental open learning system should be provided as much assistance as possible in maximizing course offerings to attract the largest number of students who can be served without sacrificing quality.

In UMA's opinion the contrary course would seriously diminish the project's ability to derive experimental results. Reduction in course production means either that UMA must diminish service to the various special target groups or that the variety of university-equivalent course offerings must be reduced. UMA realizes that the present schedule of courses represents but the skeleton of a curriculum which would be available to students engaged in such studies at traditional institutions. To achieve the equivalent of two years of college studies, a student must under UMA's present five year plan choose one of every two credit courses that is offered, a far more restrictive set of choices than is available on a traditional campus. This is a considerable constraint which reduces attractiveness and, therefore, potential demand. Consequently, UMA advises that reduction of course development below the maximum made possible by the availability of any given level of federal funding seems extremely counter-productive.

Further, the system should be given the opportunity to explore the productivity of new technology in its courseware design, both to attract students and to determine which technological modes, such as television, video cassette or audio cassette, are effective for open learning purposes, and under what circumstances. UMA also believes it must offer a variety of subjects for students participating in open learning for personal satisfaction or seeking an alternative to traditional higher education. Throughout this process the system must ensure that no learner will feel he or she had been subjected to an educationally harmful experiment.

A final set of experimental objectives exists by virtue of UMA's aim to determine whether open learning is an economically viable system for use in the United States. Since it is impractical for the federal government to fund the operations of open learning systems on a continuing basis throughout the country, UMA is attempting to discover whether state governments and other funding sources can be persuaded to devote sufficient resources to the development and operation of open learning systems. In UMA's case, state governments or governmental entities in at least four states are being asked to commit resources. If these states perceive that the system is only an experiment, with no lasting value beyond the initial five years, they will almost certainly not participate fully and the experiment will fail. Therefore, UMA believes it must hold the promise of operating and expanding in the years beyond the first experimental period, and of being economically viable.

that is thus also an experiment in financing open learning. If UMA cannot demonstrate its economic viability, state governments, private foundations and other funding sources will not in the long run commit resources necessary to implement open learning in other parts of the country.

Achieving Federal Funding Goals. To achieve the goals analyzed above, UMA has developed a five year financial plan (Appendix 3) based on its reasonable expectation of funding levels as determined through consultation with NIE. This plan will permit establishment of an economically viable open learning system which will produce the required experimental data during its initial five years; thereafter, the system hopefully will develop into a full open learning system. The key to "economic viability" in UMA's proposed financial plan is that income from the sale or lease of open learning courseware developed with federal assistance can be plowed back into the system to sustain operations. Because of the capital costs required in courseware development, it is UMA's belief that development of open learning courseware will, at least for the foreseeable future, require federal assistance. However, the operational aspects of open learning systems--the administration and delivery system, and a major portion of continuous courseware revision--can be self-supporting. Certainly the public interest will be advanced if this method of system finance is shown to be workable, for implementation of future systems will be a much more realistic expectation. UMA seeks to prove this hypothesis through the five year period.

UMA has been encouraged to view self-sufficiency in this public interest perspective virtually from the project's inception. For example, the following grant condition was *specially included* in the first Office of Education fund award to SUN:

> Interest or other income earned by investment of the grant funds is termed Investment Income. Any Investment Income earned by the grantee on advance funds received under this grant, is to be paid to the U.S. Office of Education for deposit as Miscellaneous Receipts in the U.S. Treasury, unless the grantee is a State or State agency. If the grantee is a State or State agency, the grantee is not accountable to the U.S. Office of Education for its use of Investment Income monies. Income, derived by the grantee, other than Investment Income and Copyright Royalty Income, is termed "Grant-Related Income." Such income may be produced by the services of individuals or by employing equipment, facilities or general services of the grantee organization. *Any such grant-related income earned under this grant is to be used by the grantee to further the purposes of the grant program*. If the income cannot be so used it is to be paid by the grantee to the U.S. Office of Education, for deposit as Miscellaneous Receipts in the Treasury. Except for that portion of Royalty Income authorized to be retained in accordance with 35 *Federal Register* 7317, the U.S.O.E. Copyright Guidelines, Royalty Income is to be paid by the grantee to the U.S. Office of Education for deposit as Miscellaneous Receipts in the Treasury. If the grantee receives any grant-related income or investment income in connection with this grant, the grantee shall maintain records of the receipt and desposition of the Federal share of such income.

This plan to use SUN's income stream was not altered when the Office of Education's revised Grant Terms and Conditions were issued. Paragraph 23 (b) of those guidelines states:

> Grant-Related Income shall be disposed of, at the discretion of the Commissioner, in either one of the following two ways:
>
> (1) By returning the funds to the Federal Government (a) by reducing the level of expeditures from grant funds in an amount equal to the Federal share of the Grant-Related Income (b) by treating the funds as a partial payment to the award of a succeeding (continuation) grant, or (c) by payment to miscellaneous receipts of the U.S. Treasury; or
>
> (2) By using the funds to further the purposes of the grant program from which the award was made. (OE Form 5241, 1/72, contained in Notification of Grant Award OEG-0-72-0457, November 3, 1972; emphasis supplied.)

In light of this consistent official approach, SUN and UMA predicated their estimates of attainable research goals upon the availability of income from the sale or lease of open learning courseware, and the tuition payments which would be derived from the use of those materials. As well, this seemed the mose sensible approach to financial plan design because demonstration of economic viability through operation of a model system is a prime experimental aim. Moreover, commitment of the income stream to this purpose does not appear to run counter to any substantial federal purpose. UMA's conclusion concerning the most productive funding approach also meet the requirements specified in NIE's June, 1974 "General Grant Terms and Conditions." Paragraph 23 of that document specifies that grant-related income may be used, at the discretion of the Director, to continue the same project or to "further the objectives of the legislation of the grant program under which the award was made..." (Paragraph 23b (2) and (3).

UMA's use of grant-related income for self-sufficiency of the open-learning delivery system, course revision, and program administration clearly falls within the specified subparagraphs. Further, UMA's explicit five year plan fulfills the requirement of Paragraph 23c by presenting the Grants Officer with a plan to maximize productivity for the anticipated total funding level.

The salutary effects from utilizing UMA's income for support of operations have been reviewed. But the negative side of this issue also must be explored. The attached table (Table 12) demonstrates the effect on UMA of imposition of a 10% and 50% income sharing requirement. The figures against which these percentages have been applied are the projected totals for open learning courseware lease, sale of instructional materials, and tuition during the period 1975-79. Also, the figures reflect increased income based on additional population served each year, with full operations of all UMA delivery systems projected for 1977.

Use of the 50% formula has a crippling effect which becomes unbearable as the UMA system approaches full operation. In 1975 the return of $405,600 would require eliminating the equivalent of almost all general administration or of cutting course development by one-seventh. In 1977 the income returned would be equivalent to cutting course development from $3,101,400 to $530,100. In 1979 UMA would return $4,387,500 of its total operating and development

TABLE .2. UMA INCOME LOSS FROM SHARING

Formula	1975 (1)	1976 (2)	1977 (3)	1978	1979	Total
10%	$ 81,200	$185,400	$ 514,400	$ 665,000	$ 890,500	$ 2,336,500
50%	405,600	926,700	2,571,300	3,325,000	4,387,500	11,616,100

(1) Assumes UMA is starting up with tuition and instructional materials income based on 2/7 of the UMA population

(2) Assumes UMA is starting up with tuition and instructional materials income based on 3/7 of the UMA population

(3) Full operations for 1977 - 1979

All figures include tuition, instructional materials and lease income.

budget of $4,658,600. Over the five year period it would have returned $11,616,100 in income, equal to 85% of the total five year NIE grant. In 1980, and beyond UMA would be obligated to return well over $400,000 to the federal treasury each year, even if no federal funds were received. Funding under these terms would only be self-defeating.

Applying the 10% sharing requirement is not nearly as drastic, but would still make impossible the attainment of certain important experimental aims. For example, 1975's income diversion of $81,200 probably would require eliminating one course or reducing research and evaluation activities by that amount. In 1979 the $890,500 returned to the federal government would probably prevent production of one "A" course and two "E" courses, or some such similar combination. Over the five year period UMA would have returned $2,336,500, a sum equal to 74% of the total course development budget for the peak year of 1979.

In contrast, UMA has been unable to identify any applicable federal policy which would be contravened or avoided by UMA's retention of the full income stream to support operations. So far as grant-related income sharing is concerned, the "50-50" formula which is NIE's norm has been utilized to prevent grantees from obtaining a windfall from unexpected profits. NIE has been concerned that a grantee receiving federal assistance at a predetermined level would make unexpected profits, so that the grant total would in effect substantially exceed all estimates. The 50-50 sharing formula is simply a mechanism to ameliorate the effects of such a possibility. The precise percentage of sharing is adjusted according to NIE's estimate of the probability of unexpected grant-related income.

UMA does not believe that its case presents the danger of unexpected windfall income. UMA has conducted extensive market research, cost studies and cash flow projections to determine exactly how best to use each dollar of income. The minimum scale of operation necessary to UMA's experimental success requires that this income be used to support operations, especially if UMA is to demonstrate that open learning systems can be operationally self-supporting. The possibility of excessive unexpected income is therefore relatively slight; and any such income which might be produced would be the subject of extensive accounting and reporting systems. Considering this balance of public interest factors, UMA can recommend only that this income be returned to the system to meet operational or developmental expenses.

The Special Question of Copyright. To this point we have discussed UMA's income only in terms of grant-related income. As noted earlier, however, copyright income is the other component of this stream. Whether copyright income exists at all appears to depend upon NIE's resolution of the following policy issues: Will the open learning experiment be enhanced, on balance, if UMA copyrights some or all of the course materials produced in whole or part with federal assistance? Would any other federal policy, or the public interest in general, be disserved by grant of copyright under these conditions?

UMA does not believe that the federal copyright policy considerations which normally obtain in grant situations apply to the UMA experiment. Generally, the purpose of federal copyright policy and use of sharing formulas is to prevent a federal grantee from achieving an unfair competitive advantage in a marketplace where its competitors do not have the advantage of federal funding. This is not UMA's situation, however. There is no existing market for open learning courseware which might be undermined by UMA's entry. Large scale entry by other potential producers also must await formation of an established market. Consequently, UMA's external funding will actually hasten the day when other producers will find that courseware development is economically feasible. In the meantime, the heavy potential demand for variety in open learning course--which far exceed any single producer's capacity--creates a competitive environment where small scale courseware producers are aided, rather than harmed, by UMA's attempt to establish the market. UMA is in reality at a competitive disadvantage during this period because its funding will be used for delivery and system administration as well as courseware development. These market conditions are not expected to change rapidly: certainly, at present, the public interest lies in stimulating productivity as much as possible.

Moreover, open learning courseware by and large will not compete directly with texts and similar materials used in traditional institutional settings. Most open learning course materials are designed for integral use with other course components, e.g., a textbook will be keyed to television presentations and audio cassette lessons. If printed materials from an open learning course are later adapted for text use in non-open learning setting, UMA believes a royalty sharing formula would be appropriate under Paragraph 9b of NIE's June, 1974 "Grant Terms and Conditions." This competitive equalization in the traditional textbook market could be included in advance in the grant and implemented by UMA through contract. UMA does not anticipate very many adaptations, however; plans currently call for development of open learning materials without attempting to ensure adaptability for conventional purposes. UMA has decided on this approach precisely because of developmental inefficiencies that may result when production for both markets is attempted simultaneously.

Given the public interest in maximum productivity from any given level of federal funding, UMA believes that the government's interest is to aid in filling the demand for open learning courseware as expeditiously as possible, and to speed accumulation of the initial experimental data as rapidly as possible so that courseware can be designed to meet learner's needs. UMA therefore recommends that revenue from copyright royalties be treated in precisely the same fashion as grant-related income. UMA should be permitted to retain these funds to increase the possibility that it will achieve the goal of self-sufficiency.

But what about the initial question of whether copyright is appropriate? Should not all materials which UMA develops pursuant to federal grants be in the public domain? We do not believe so, for failure to copyright these materials will once again be deleterious to UMA's experimental purpose.

First, UMA plans to distribute its open learning courseware as widely as possible and at the lowest lease charges consistent with operations above the loss level. This proposed national distribution is an integral part of the experiment to determine demand for open learning materials in a variety of settings. This will substantially enhance UMA's productivity by increasing the potential for derivation of experimental results, as well as encouraging open learning experiments outside the UMA region.

Second, as the Emee Fairbairn economic analysis shows, one of UMA's prime experimental purposes is to develop some way to measure open learning's social cost. Unless UMA can be credited with the dollar equivalent of the social utility (social benefit) of the courseware it develops, such measurement is impossible. If UMA is able to develop a range of attractive courseware with the funds available to it, and certain of UMA's courses are utilized in other traditional or open learning systems, any competent tracing of UMA's costs and benefits requires that UMA derive a reasonable return from other institutions' use of UMA courseware.

Third, to create the necessary support from state government and other funding agencies, UMA must demonstrate its economic self-sufficiency. Self-sufficiency will be extremely difficult if UMA is not permitted to copyright the courseware materials it develops. This seems true as well for any other open learning systems which may be established in other areas of the country. Their productivity as open learning institutions will depend on their ability efficiently to produce open learning courses. Consequently, the public interest will be served if each such institution has the benefits of copyright protection so that its successes in courseware production are rewarded by acceptance in the academic marketplace, and by the operational self-sufficiency such utility will bring.

As currently envisioned, the market for open learning courseware development (as opposed to delivery and administration of open learning materials) will for the foreseeable future require at least some form of federal subsidy. If we reach a stage where entry of significant amounts of private capital appears to be reasonably likely, NIE might deem it necessary to review copyright authorizations for open learning courseware development and the full retention of copyright royalties. But that day is far in the future. In the meantime, UMA must conclude that denial of copyright protection and frustration of full use of the income from sale or lease of copyrighted materials are contrary to the public interest. Such a policy would be an unnecessary obstacle to self-sufficiency, would inhibit identification of the social costs and benefits of the model open learning system, and would prevent measurement of efficiency in the production of open learning course materials in this developing market.

SUMMARY

The detailed University of Mid-America Five-Year Plan of operations summarized in this chapter was submitted to NIE in the proposal of October 15, 1974. This proposal also set forth a specific plan of operations for 1975, consisting of 18 tasks to be undertaken during the forthcoming grant period. This plan of operations for 1975 is discussed in Chapter V of this report, which deals with the planning which led to the incorporation of UMA.

CHAPTER V
UMA ADMINISTRATIVE STRUCTURES AND PLANS

WORK ASSIGNMENT #5

> Identify the advantages and disadvantages of retaining the present SUN administrative structure, versus evolving into a regional non-profit holding corporation structure, to manage the open learning project and courseware development. In accordance with this work statement, SUN will:
>
> A. Study the administrative, legal, political, economic and operational constraints upon the two types of organizational constructs, including the receipt of state appropriations across state lines.
>
> B. Consider and resolve the operational relationships of several state members to consortium administration, the types of educational and fiscal commitments required, the methods by which open learning courseware will be employed in each member state, the types of delivery systems to be activated in each state, the operational relationship of each delivery system to the consortium, and the methods of awarding credit for successful course completion.
>
> C. Identify the specific states to be initially involved in the regional consortium, and develop a plan to formalize the organization of the University of Mid-America to become operational by, and initiate employment of courseware in, January, 1975.
>
> D. Quantify potential audience size in the regional consortium and develop statistical projections of students on a state-by-state basis for the five year project period.
>
> E. Develop a staffing plan and operating budget for the University of Mid-America for calendar 1975.
>
> F. Develop a plan to secure accreditation.

Work Assignment #5 was intended to guide SUN's investigation of establishment of an open learning system of regional magnitude in the Midwest. A regional approach to open learning, it was assumed, would help insure SUN and the interested funding agencies that open learning courses developed in Nebraska would prove acceptable for use with populations beyond the state boundaries of Nebraska. At the same time, it was evident that the potential pitfalls of expanding into a regional structure needed close study and evaluation: e.g., how might state appropriations be used to support a regional entity; should delivery be a function of the regional corporation, or of the individual states; what would the relationship be of the regional corporation to the individual postsecondary institutions in the member states; and how might accreditation for UMA courses be secured? It was kept in mind throughout the 1974 planning period that it might be necessary to continue SUN operations as a Nebraska-only entity. Only after it became clear that the structure which had been devised circumvented these problems was the decision made to incorporate UMA.

Work Assignment #5 proved to be an enormously complex undertaking. Consequently, the assignment was not completed during 1974 in as comprehensive a manner as initially thought possible. For example, it was impossible during 1974 to specify precisely the nature of each delivery system, or to explore in full all the possible fiscal and organizational alternatives concerning the relationship of an individual state to the consortium. Despite limitations such as this, considerable work was done on this assignment, eventuating in the incorporation of the regional consortium known as the University of Mid-America.

This chapter contains five sections. The first section briefly outlines the major outcomes resulting from work on this assignment. The second section chronicles the creation of UMA, the regional consortium. The next section describes enrollment projections for courses offered through the regional entity. The fourth section outlines investigation made into the problems of accreditation. Finally, the chapter contains a section on proposed activities for the new regional consortium during 1975.

The insights and knowledge base inferred by this work assignment will really come only after UMA has had more time to better understand its own intentions and procedures. Decisions about the consortium made during 1974 are hopefully not irreversible, as experience will undoubtedly provide hints as to how things can be done better. UMA's survival depends in part on its ability to learn from its own successes and failures.

SUMMARY OF MAJOR OUTCOMES

- The University of Mid-America was incorporated.
- A regional projection of potential enrollments in UMA courses was completed.
- Initial inquiries into accreditation were made.
- Plans for UMA during 1975 were developed.

THE CREATION OF UMA

Investigations into the various administrative options available to Nebraska and to the region were initiated in February of 1974. Formal incorporation of the University of Mid-America occurred on July 26, 1974. An organizational meeting was held shortly thereafter, with a public announcement that the University of Mid-America had been founded as a consortium of five state universities in the states of Nebraska, Missouri, Iowa, and Kansas.

To aid in the investigation of the potential for creation of a regional open learning system in the Midwest, the SUN staff turned during 1974 to members of the Mid-America State Universities Association (MASUA). This possible arrangement held a number of distinct advantages. First, it was logical that a regional open learning system like that envisioned should operate in contiguous states. Second, membership of MASUA consisted of seven of the eight universities in the Big Eight conference, and these universities had a long history of cooperative projects through MASUA and through the Big Eight conference. Furthermore, MASUA had a previous interest in open learning development in the region, and had been monitoring SUN developmental efforts for some time. For instance, on February 27, 1973, MASUA passed the following resolution endorsing SUN:

> It was moved, seconded and carried that MASUA enthusiastically endorses the efforts of the University of Nebraska in the establishment of the SUN program and its extension to the region and assures the University of Nebraska that the MASUA universities, collectively and individually, will be pleased to participate in the extended program in any way that may be appropriate.

On February 1, 1974 MASUA passed a resolution offering its cooperation in the development of a regional open learning consortium:

> President Parks moved (later seconded and approved) that the concept of SUN being renamed University of Mid-America, sponsored and operated by MASUA, be approved in principle and that a committee composed of representatives of each member institution be formed to formulate and present a plan for organization and implementation to be presented formally to the MASUA presidents.

As planning for UMA progressed, the cooperation of MASUA became especially significant, as it became apparent that certain of the prospective member states might use MASUA involvement as a vehicle to secure state approval of the UMA concept.

Options

A MASUA/UMA Ad Hoc Planning Committee was selected to investigate the formation of a regional open learning system. This committee met in March and in May of 1974. The Committee considered several major options for administrative structures for the regional enterprise, including the following:

The open learning system might remain a purely Nebraska-based structure. If left as a Nebraska entity, the organization of an effective delivery system could be facilitated and political and jurisdictional problems would be limited to those existing within a single state. But it was recognized that a single state organization limited to Nebraska would be at a disadvantage because of the inherent limitation in the size of the clientele.

Since the major expenses of an open learning system involve course development, regional delivery would be economically advantageous in that it would provide a much greater return of tuition dollars per dollar invested in course development. A further disadvantage of restricting the program to Nebraska would be the potential limitation imposed upon faculty and learner advice and involvement in course development.

Serious consideration was given to the option of creating the open learning program as a Nebraska-based entity, with heavy reliance upon regional advice. This second option would have provided some diversity of input for course development, but would not necessarily have guaranteed increased audience size or a systematic and broad-based institutional commitment.

A third option involved a fairly loose association of universities, including the University of Nebraska. Such an association would tend to broaden the use of course material, and would likewise broaden the base of advice related to course development. But such an arrangement might require little, if any, educational or fiscal commitment by the associates. Furthermore, the association would not resolve problems in the coordination of delivery activities across the states, and it would not necessarily facilitate a comprehensive program of research on and attention to student needs.

The fourth option considered was the creation of a new regional entity with University of Nebraska participation and initial leadership. It was assumed that a new regional entity would better assure broad utilization of course materials, expand opportunities for input into course development decisions, and facilitate coordination of delivery activities. And finally, it would serve as a regional working model for later efforts in open learning. Economically, it seemed sensible to create an organization which would both expand the learner market and attract potentially major fiscal commitments under a long-term program. Disadvantages of creating such a new entity, however, included the possibility that basic organizational and administrative structures would duplicate functions currently in existence.

The fourth option was finally selected as the most feasible approach to follow. There would be problems, everyone knew, but the problems appeared worth the potential payoffs inherent in the approach.

Purpose and Responsibilities

The matter of the specific purpose of UMA was one which was resolved with adoption of a middle-ground position on the relationship between course production and course delivery. Although it was recognized that delivery of courses to students was legally a state prerogative and one most logically left to states for political and economic reasons, the planners wanted to retain some relationship between the developers of courseware and the delivery of courses to learners.

It was agreed that course development and distribution processes must be centralized as a function of the regional entity, in order to avoid wasteful duplication of effort. The major source of expense in the system is course development costs. These costs are relatively fixed, and do not necessarily increase in proportion to enrollment. Therefore, the broader the economic base of the consortium, and the larger the potential audience, the greater the prospects for economic viability.

A number of alternatives were considered as to the apportionment of the other functions among the regional entity and its several members. As one alternative, consideration was given to limiting the regional entity's functions to course development and distribution. This option appeared to have the danger of isolation of the development process from the learners and from the various institutional bases within the region.

Consideration was also given to assigning both course development and delivery to the regional model as an operational responsibility. Such an approach would minimize the problems inherent in isolation of the development process from the learners. However, the political realities of relations between the regional program and the individual states, with differing educational governance structures and delivery resources, indicated this approach would probably be unworkable.

The option agreed upon by the regional model planners is one which leaves to the institutions of the participating states the responsibility for delivery but retains for UMA some coordination of this delivery, as well as the responsibility for encouraging each state to develop its own delivery system. Responsibilities for course development, research, creation of public understanding and awareness, faculty training, and perhaps eventually degree-granting were also retained for the regional entity. This course was determined to be the most judicious, because it would avoid practical difficulties while retaining a close relationship between UMA course developers and the individual learners served by a participating institution. The decentralization of delivery systems would allow for maximum use of unique local resources in the several states composing the consortium. Such an arrangement, however, does make necessary the defining of working relationships between the regional entity and the state institutions participating in delivery.

Membership of the Consortium

Another major issue focused on the matter of founding membership, or initial institutional participation, in the affairs of UMA. Interest in the region indicated that it might have been possible to include institutions outside the MASUA membership. But given the desire to be operational by January, 1975, and considering the history of cooperation among the MASUA members, it was decided to offer only to the MASUA institutions the opportunity to become founding participants, and leave further expansion for future consideration. As UMA gained more experinece, it could turn to other states and institutions and expand the base of participation. Thus, UMA was founded as a "program of the Mid-America State Universities Association" and the seven institutions which comprise MASUA. As incorporation day neared, it became evident that local conditions would preclude the two Oklahoma institutions from becoming formal partners at this time in the UMA venture, and thus the founding participants became the other five institutions. UMA Trustees have made clear their intent to invite other institutions to become participants as that development is appropriate.

Incorporation of UMA

After these planning decisions, UMA planners were satisfied that they had identified administrative and organizational structures which were satisfactory for the operation of a regional open learning consortium. This plan held several clear advantages over retaining the SUN structure as a Nebraska only operation: the regional corporation could serve much larger numbers of students; the regional corporation would have a broader fiscal base, through state contributions, increased tuition dollars, and a broader appeal to both public and private funding agencies; and because of its broader scope, the regional corporation would have much greater visibility than a statewide open learning system. In the absence of any overriding disadvantages to the plan, the decision was made to incorporate UMA. It was decided that Presidents of the five participating institutions would serve as the UMA Board of Trustees for the initial period of operations. The membership of the Board as of January, 1975 was:

C. Brice Ratchford, President
University of Missouri

W. Robert Parks, President
Iowa State University

Archie Dykes, Chancellor
University of Kansas

Duane C. Acker, President
Kansas State University

D. B. Varner, President
University of Nebraska

The UMA Articles of Incorporation as a not-for-profit corporation were filed with the State of Nebraska on July 26, 1974. The Bylaws of the University of Mid-America were approved on July 29, 1974. UMA was now a legal regional entity.

Of particular note was the attempt made by the new consortium to insure that its efforts would not proceed ignorant of other relevant experience extant throughout the nation and the world, nor without counsel from people most qualified to comment upon UMA plans and procedures. To these ends, four advisory councils and panels were established: A National Council of Advisors, composed of lay and educational leaders from Mid-America and the nation, to advise the Board of Trustees; a National Research and Evaluation Advisory Panel to comment upon UMA research and evaluation activities; a National Media Advisory Panel to advise production staff; and a small UMA Special Consultants Panel, composed of distinguished educators, to generally advise UMA management on the program's development. Figure 7 contains a summary of current members of these advisory groups.

Not all the questions about the actual workings of the new regional consortium have been addressed, of course. There remained questions about, for example, the extent to which states other than Nebraska will be included in planning activities; how the regional entity can actually assit in setting up state delivery systems; and the long-term financial commitment to the regional entity from member institutions. Work conducted during 1975 should shed some light on these questions, and will undoubtedly raise other issues.

ENROLLMENT PROJECTIONS

As part of the planning for UMA, enrollment projections for the entire five state region under consideration were prepared. (Figures for Oklahoma are included as prepared during the planning period.) The formula used in making these projections is based upon the results of the market surveys conducted by SUN during 1973, and on the assumption of 11 courses being available simultaneously during a given year. The surveys conducted during 1973 at the behest of SUN indicated that approximately 2% of the adult population surveyed would be "very likely" to enroll in a SUN-type course, if available. With this figure in mind (while noting its tenuousness), an enrollment projection formula was prepared, as follows:

1. Total population x .6 = Total adult population
   (about 60% of the total population is 18 or older)

2. Adult population x .02 = Student potential
   (market surveys indicate about 2% of the adult population would enroll.)

UMA PANEL OF CONSULTANTS

Dr. K. Patricia Cross
Senior Research Psychologist
Educational Testing Service
Berkeley, California

Dr. R. William Graham
Superintendent/President
Barstow Community College District
Barstow, California

Dr. Charles Wedemeyer
The William H. Lighty
Professor of Education
University of Wisconsin-Extension
Madison, Wisconsin

Dr. Samuel B. Gould
President
Institute for Educational
Development
New York, New York

Dr. Cyril O. Houle
Professor of Education
University of Chicago
Chicago, Illinois

Dr. Arthur Chickering
Vice President
Empire State College
Saratoga Springs, New York

NATIONAL COUNCIL OF ADVISORS

Mrs. Ann Armstrong
Counselor to the President
of the United States
The White House
Washington, D.C.

Ernest L. Boyer*
Chancellor
State University of New
York System
99 Washington Avenue
Albany, New York

Joseph P. Cosand*
Director
The University of Michigan
Center for the Study of
Higher Education
School of Education
Corner East and South
University Avenue
Ann Arbor, Michigan

Norman Cousins*
Editor, Saturday Review/
World
488 Madison Avenue
New York, New York

General John H. Cushman*
Commandant
Department of the Army
U.S. Army Command and General
Staff College
Fort Leavenworth, Kansas

The Honorable Robert Docking*
Governor of Kansas
2nd Floor, State Capital
Topeka, Kansas

Irvin Fane*
Spencer, Fane, Britt & Browne
1000 Power & Light Building
106 W. 14th
Kansas City, Missouri

The Honorable J. William Fulbright
United States Senate
Senate Office Building
Washington, D.C.

The Honorable Edith Green*
2441 Rayburn House Office
Building
Washington, D. C.

*Indicates those who have accepted appointment to the Council

Figure 7. Members of Advisory Panels

Cyril O. Houle*
Professor of Education
Unviersity of Chicago
5835 Kimbark Avenue
Chicago, Illinois

Fred G. Kling, Jr.*
Prosecuting Attorney
Gentry County Missouri
Court House
Albany, Missouri

Judge Wade H. McCree, Jr.*
6th Circuit Court of Appeals
Federal Building
Detroit, Michigan

Franklin D. Murphy*
Chairman of the Board
Times Mirror
Times Mirror Square
Los Angeles, California

William C. Norris*
Chairman of the Board
Control Data Corporation
8100-34th Avenue South
Minneapolis, Minnesota

Mrs. H. Rand Petersen*
President
Iowa Board of Regents
1411-10th Street
Harlan, Iowa

Alvin C. Eurich*
President
Academy for Educational Development, Inc.
680 Fifth Avenue
New York, New York

Stanley Redeker*
Past President, Iowa Board of Regents
1508 Kate Shelley Drive
Boone, Iowa

Robert Scott
Executive Vice President
North Carolina Agribusiness Council, Inc.
211 Alegheny
Raleigh, North Carolina

W. A. Strauss*
President
Northern Natural Gas
2223 Dodge Street
Omaha, Nebraska

Homer Wadsworth
Director
The Cleveland Associated Foundation
700 National City Bank Building
Cleveland, Ohio

Kermit Hansen*
President of the United States Bank in Omaha & President of the University of Nebraska Board of Regents
Box 3408
Omaha, Nebraska

NATIONAL MEDIA CONSULTANTS PANEL

Harold W. Anderson*
President, World Publishing Company & Chairman, American Newspaper Publishers Assoc.
World-Herald Square
Omaha, Nebraska

Charles Eames
901 Washington Blvd.
Venice, California

*Indicates those who have accepted appointment to the Panel

Figure 7 (Continued)

Gail Patrick Jackson
President, Jackson Productions
2003 LaBrea Terrace
Hollywood, California

Bill Kobin*
Vice President
Children's Television Workshop
1 Lincoln Plaza
New York, New York

Robert Lewis Shayon
Professor of Communications
The Annenberg School of Communications
The University of Pennsylvania
Philadelphia, Pennsylvania

Mort Werner*
Vice President,
National Broadcasting Co.
30 Rockefeller Plaza
New York, New York

William Harley*
President
National Association of Educational Broadcasters
1346 Connecticut Avenue, N.W.
Washington, D.C.

Howard Hitchens*
Executive Director
Association for Educational Communications & Technology
1201 Sixteenth Street, N.W.
Washington, D.C.

John Montgomer*
Vice President-Programming
Public Broadcasting Service
485 L'Enfant Plaza North, S.W.
Washington, D. C.

Frank Norwood*
Joint Council on Educational Telecommunications, Inc.
1126 Sixteenth Street, N.W.
Washington, D.C.

Donald Quayle*
Senior Vice President for Broadcasting
Corporation for Public Broadcasting
888 Sixteenth Street, N.W.
Washington, D.C.

RESEARCH AND EVALUATION ADVISORY PANEL

Dr. David Krathwohl
Dean, School of Education
Syracuse University
Syracuse, New York

Dr. Gene Glass
Director
Laboratory of Educational Research
University of Colorado
Boulder, Colorado

Dr. Alan Knox
Associate Vice-Chancellor for Continuing Education
University of Illinois
Urbana, Illinois

Dr. Edward Palmer
Vice President for Research
Children's Television Workshop
1865 Broadway
New York, New York

Dr. Decker Walker
School of Education
Stanford University
Palo Alto, California

*Indicates those who have accepted appointment to the Council.

Figure 7. (Continued)

3. Student potential x 1/11 - Student potential/course/year (Assumes a total of 11 courses available)

4. Student potential x 1.3 = Enrollment potential/course/year (Assumes that, with 11 courses available, each student would take equivalent of 1.3 courses/year)

5. Enrollment potential/course/year x .25 = Enrollment potential/course/year corrected for error (Assumes that .25 of those who said they would enroll in market surveys actually would enroll if 11 courses were available)

6. Initial enrollment/course/year corrected for error x .50 = Enrollment projection after initial offering (Assumes that after initial offering enrollment potential should be halved)

Numerous "corrections for error" were included in the formula, reflecting a generally cautious view of the operational validity of the market survey results. Table 13 shows the results of applying this formula to the UMA region.

As the number of available courses increases, it seems logical to assume that other variables in the formula might increase as well. For example, the addition of 11 more courses in another year might, because of the greater availability of choice among courses, lead every other student to register for two courses in one year. If that were the case, the factor of 1.3 enrollments per potential student (Step 4) would be increased to a factor of 1.5. At the same time, the availability of a greater number of courses from which to choose might increase the number of individuals who would actually enroll. The factor of .25 (Step 5), which amounts to 25% of the 2% responding favorably in market surveys, might increase by .10 for each additional 11 courses. In Table 14 the UMA staff (for purposes of illustration) added .2 to the base factor of 1.3

enrollments per student and .10 to the factor .25--students enrolling for each additional 11 courses.

Table 13. UMA enrollment projections.
(11-course base)

	Iowa	Nebraska	Kansas	Missouri	Oklahoma
Total Population	2,904,000	1,542,000	2,279,000	4,757,000	2,633,000
1. Adult Population	1,744,200	925,000	1,367,400	2,854,000	1,597,800
2. Student Potential	34,848	18,500	27,348	57,080	31,956
3. Student Potential/ course/year	3,168	1,681	2,486	5,187	2,905
4. Enrollment Potential/ course/year	4,118	2,185	3,231	6,746	3,777
5. Enrollment potential/ course/year corrected for error	1,030	546	808	1,686	944
6. Enrollment Potential/ course/year after initial offering	515	273	404	843	472

Thus, if 55 courses were available, those factors would become 2.1 and .65. The formula was also altered so that in 1975 the per course enrollment was calculated by dividing by 11, since a total of 11 courses would be available. By 1979, when 55 courses would be offered, the per course figure was calculated by dividing by 55. If initial enrollments in the first one or two years of development indicate the projections are accurate,

Table 14. Five year projection of student enrollment in UMA states*

STATE	1975			1976			1977			1978			1979		
	Initial Offering of 9 Courses	Repeat Offering of 5 Courses	Enrollment Total	Initial Offering of 11 Courses	Repeat Offering of 11 Courses	Enrollment Total	Initial Offering of 11 Courses	Repeat Offering of 22 Courses	Enrollment Total	Initial Offering of 11 Courses	Repeat Offering of 33 Courses	Enrollment Total	Initial Offering of 11 Courses	Repeat Offering of 44 Courses	Enrollment Total
owa	9270	1030	10300	9148	4564	13712	8879	8879	17758	7598	13630	21228	9522	19043	28565
ebraska	4914	546	5460	4851	2420	7271	4708	4708	9416	4029	7227	11256	5049	10076	15125
ansas	7267	807	8074	7174	3579	10753	6963	6963	13926	5958	10688	16646	7467	14862	22329
issouri	15174	1686	16860	14979	7473	22451	14538	14538	29076	12441	22316	34757	15591	31115	46706
klahoma	8496	944	9440	8387	4184	12571	8140	8140	16280	6966	12495	19461	8729	17421	26150
OTAL	45121	5013	50134	44539	22220	66758	43228	43228	86456	36992	66356	103348	46358	92517	138875

*For the purposes of this projection, 1974 is considered to be a planning and course prototype testing year.
It is assumed that on the average each course would be offered one time each year.

a total of nearly 139,000 enrollments might be counted by 1979, if 55 courses were available throughout the UMA region. If, on the other hand, early experience indicates the projections need revision, then those revisions can be effected for projecting enrollments later into the decade.

The model will be tested initially with the first offering of courses in Nebraska during 1975. In addition, some variation in calculation should reflect situations of fairly high saturation of course offerings over time, or heavy enrollment in courses of particularly high demand or great popularity. Finally, such variables as potential for broadcast delivery must be considered to insure greater accuracy.

The experience of the Chicago TV College is also under review with respect to the demand question. The following excerpt from a Chicago TV College publication entitled A FIFTH REPORT, reflects the TV College experience.

> The first three years proved that in a metropolitan area the size of Chicago, with a potential viewing audience of some six to six-and-a half million people, there is a virtually inexhaustible audience of mature, able, and highly motivated students eager to enroll as credit students in college-level television courses.

During the 18 years of its existence, the Chicago TV College enrolled 80,000 individuals in credit televised courses, with the most enrollees taking no more than one course. If the 2% enrollment projection estimate used above is applied to the Chicago area's 3,900,000 adult population, the product is 78,000 registrants. The actual registration in Chicago TV College totalled 80,000.

It is difficult to draw direct comparisons between the Chicago and UMA programs, but it is instructive to review the Chicago experience. It is also important to observe that, because of a number of factors, the Chicago TV College enrollments have declined during the last few years. UMA is planning open learning instruction which may be an improvement over the traditional monochrome television lecture approach, which could alter enrollment tendencies.

These enrollment projections must be treated cautiously in terms of their absolute value, but the figures do illustrate graphically the economics of scale concept. If course development costs are virtually independent of enrollments, and even given the delivery cost factor, overall per pupil cost is dramatically lowered when costs can be amortized across large numbers of students.

ACCREDITATION

Several options for the accreditation of open learning courses were considered by UMA planners. UMA might secure accreditation and grant credit for its courses directly, as an independent system; credit might be granted by each of the state delivery systems, either independently or through the regents of the participating universities; or accreditation might be sought on a course-by-course basis through the academic departments of participating universities and other postsecondary institutions in the UMA states.

Awarding its own credit would have given UMA the greatest flexibility in developing its curriculum, since this option would impose the fewest external constraints upon the system. But this option would have the disadvantage of divorcing the UMA curriculum from curricula of other postsecondary institutions in the region, making coordination of UMA with other institutions and agencies more difficult. Furthermore, this option presented the danger that UMA would be seen as an independent agency in direct competition with existing institutions, thereby making cooperative relationships much more difficult to form. The planners, therefore, determined that credit for UMA courses should, at least initially, be granted through existing postsecondary institutions. The possibility of UMA eventually granting its own credit and/or degrees, once the system is well underway and harmonious relationships developed with other institutions, was left to the discretion of the Trustees.

For similar reasons, the option of each state delivery system granting its own credit was rejected. The option of securing accreditation through academic departments was seen as offering the greatest possiblity for coordination of UMA programs with those of existing institutions. Moreover, the opinions of the academic departments would act as a further check upon the quality of UMA produced courses, and the relations so developed with the academic faculties of participating institutions might prove very beneficial for future course development efforts. One potential disadvantage of this plan would be the reluctance of academic faculty members to accept courses created externally for credit through their departments; therefore, close working relationships with on-campus faculty would need to be developed.

Given these considerations, UMA has chosen to secure accreditation of its courses, on a course-by-course basis, through the academic departments of participating universities and other postsecondary institutions in the UMA states. By extending the credit-granting function to institutions which are not presently members of UMA, this plan helps to pave the way towards the development of statewide delivery systems in which all post-secondary agencies participate in open learning. The option of UMA eventually granting its own credit has been retained by the Trustees, and this matter is to be given further consideration as the five-year developmental period proceeds.

UMA PLANS FOR 1975

In February, 1975, UMA begins its first full year as a regional entity. Specific plans for 1975 have been developing following from the larger five year plan described in Chapter IV. Staffing arrangements for 1975 are as outlined in Chapter IV.

Tasks

Of the 27 major tasks proposed for the next five years, 18 tasks are slated for particular attention during 1975. UMA staff have outlined general procedures to be followed in addressing each task, and have identified the outcomes expected to result, during the next 12-18 months, from work on these tasks. The tasks and expected outcomes are outlined below:

1. Examine effectiveness of management and procedures in the open learning delivery systems.
    - A. As a result of the formative nature of this work, changes should be made as needed in managerial procedures, resulting in refined operating procedures.
    - B. A summative evaluation of management procedures should be used in refining overall delivery system procedures, and should be instrumental in formulating operating procedures for delivery systems in other states.

2. Begin determination of the effectiveness of learning centers

   A. During the next 18 months, UMA staff will have gathered initial data and analyzed it to examine such factors relevant to effectiveness as: the role of the learning center coordinator and support staff, the relation of learning centers to other institutions of higher education, the relation of course faculty to learning centers, the physical design of centers, and the role of educational information gathering and dissemination through the centers.

   B. Based on this preliminary analysis, UMA staff and the Academic Council will refine the conception of a learning center and begin development of operational criteria for learning center operation. Throughout this process, consultants and delivery system personnel will be involved.

   C. The beginnings of generalizable data about learning center effectiveness will be available for other state delivery systems and other open learning programs.

3. Develop effective means for training faculty and learning center staff.

   A. A detailed plan will have been formulated for developing and training open learning faculty and learning center staff. This plan will include such topics as: desired background, personality characteristics required, information and skills which must be acquired, and ways to achieve those goals through training (and selection).

   B. Guidelines for developing such training programs will grow out of this work, to be made available to other UMA states for the establishment of their delivery systems.

4. Begin study of reasons for completion or non-completion of open learning courses and programs.

   A. Tentative recommendations to delivery system staffs and course teams about attrition will have been developed. These may result in adjustments in admissions policy, delivery system operations, or course design.

   B. An ongoing procedure for continuing this study and feedback on a permanent basis will have been established. Information and tentative conclusions gathered will have been made available, through UMA, to other state delivery systems.

5. Assist states associated with UMA to establish coordinated state delivery systems.

   A. Guidelines will have been developed under the auspices of the UMA Academic Council for establishing open learning state delivery systems. Those guidelines will have been carefully reviewed and revised in light of experience in Nebraska and elsewhere, and will be made available through planned dissemination and by request to anyone interested in such guidelines. They will also serve to guide the planning of the UMA states.

   B. Each UMA state will, by December 1975, have established a comprehensive plan for the delivery of open learning educational services to residents of that state. The plan will identify available resources, establish delivery procedures, and include commitments from appropriate agencies, institutions, and/or individuals (e.g., educational television stations, newspapers, community colleges) to perform certain services relevant to that delivery system. Operational development of state systems will have begun by the end of 1975 with initial assistance from NIE funds.

6. Determine whom UMA should and does serve.

   A. The primary outcome of this work will be an improved understanding of whom UMA is serving, and thus an opportunity for a more realistic picture of whom UMA might serve. These findings should be influential in determining curriculum direction and in course selection and delivery.

B. A second outcome of this work will be a body of data that will enable learning center coordinators to counsel more adequately their clientele.

7. Develop conception of and plan UMA's ongoing curriculum.

UMA will develop a curricular philosophy as a result of the synthesis of the interests of learners and a normative determination of which needs will be and can be served and the ways in which those will be met. This philosophy will be an extension of the open learning goals described in Chapter I of this document.

This curricular philosophy will have at least two distinct but related parts:

A. It will specify criteria for the production and/or acquisition of courses. Such oft-used terms as "orientation to the learner," "individualized instruction," "modularization," "interdisciplinary," "problem-centered," and "academic quality" will be given more precise and operational definitions. It will specify what is meant by saying that the "value-implications" of a subject matter will be presented, and will detail the cognitive and non-cognitive goals for UMA.

B. The curricular philosophy will also contain criteria concerning how courses relate to one another and how they might be put into large groups (e.g., degrees). These criteria will include a discussion and decision as to whether UMA should have one curriculum or many curricula (or degrees); they will include a discussion and decision concerning the kinds of personal and social change to be sought as a result of learning experiences in UMA.

8. Begin study of adult learning as it relates to UMA's audience.

A. The guidelines on adult learning as developed will be used in UMA planning, as well as in course development efforts, to insure that what is known about adults and how they learn will be considered in all decisions.

B. The adult learning guidelines will be available to interested parties.

9. Produce and/or acquire 12 courses, with attention to design flexibility and refined procedures for the acquisition process.

   A. Twelve courses will have been completed or will be in various stages of design or production, thus providing a full array of education offerings for UMA delivery systems and for lease elsewhere.

   B. Improved design techniques for modularizing courses to increase flexibility will have been developed and tested in use.

   C. Refined procedures for the entire process of acquiring and adapting existing courseware will be available for use in UMA and as models for other open learning systems.

10. Determine effectiveness of UMA courses.

   A. Useful in curriculum planning (including implications for the acquisition and selection of UMA courses), course development (including implications for courseware design, production, and refinement), and learning center administration (including implications for advising, counseling, and tutoring).

   B. Useful in portraying course effectiveness to students and the UMA publics (taxpayers, institutions of higher and secondary education, board members, sponsors, etc.).

11. Begin explorations into the potential and limitations of various media roles and components within UMA courses.

   A. Of primary importance will be the development of a beginning set of guidelines for media selection in UMA courses, insofar as affective measures are important considerations in media selection. These guidelines should be extremely useful in informing course development efforts.

B. Work done at UMA on this issue will be available for coordination with work done at Children's Television Workshop and the Open University of the United Kingdom on the use of television in instruction.

12. Develop efficient ways to revise courses to prevent obsolescence and to reflect data on their effectiveness.

A. UMA will have developed a set of principles and procedures for course revision and suitable timelines for that revision process. These principles and procedures will contain criteria covering the extent to which a course can be revised over a given period, the relation between the costs of revision and the value of revisions in the course, the relation of the revision of one course to that of another and, most importantly, there will be an operational model concerning how the results of learner surveys, content consultant opinions, and the judgement of UMA staff can best be fed back into the course development process. This will involve an operational decision concerning the relation between the study of the value and effectiveness of courses and the course team.

B. Experience gained from application of this process during 1975-76 will by used to modify the process as necessary and to provide guidelines for other producers of open learning coursewares.

13. Continue examination of the instructional development process, including design, production, and evaluation to improve effectiveness of the process.

A. A refined process (or multiple processes) of instructional development will be established for UMA. This will not be a rigid structure, but a set of guidelines, definitions of roles, and delineations of responsibility that can assist all UMA course teams.

B. Increased ongoing communciation among those involved in course development in UMA will be established.

C. Generalizable data on what UMA has learned about salient aspects of instructional design of open learning courseware will be available.

14. Determine whether UMA will grant credit and/ or degrees.

    A. The primary outcome related to this work is that the UMA Board will, by June 1976, decide whether UMA will grant credit for its courses, and will decide whether UMA itself will become a degree-granting institution. If the decision is affirmative UMA will further decide what kinds of degrees it will seek to offer.

    B. A secondary outcome resulting from this work will be the papers generated to stimulate the decision UMA makes. These papers will be made available to other interested parties.

15. Make decisions related to possible expansion of the consortium.

    A. On the basis of the recommendations given to them, together with supporting documentation, the UMA Board will make a policy decision on expansion plans, and will begin during 1975-76 to implement the selected plan.

    B. A secondary outcome will be a paper analyzing in detail alternative expansion plans, together with a discussion as to the pros and cons of each plan. The paper will be made available to interested parties.

16. Begin determination of social change brought about by UMA.

    A. Policies relevant to the collection of certain kinds of data related to monitoring social change will be developed. These policies should influence the allocation of resources to the measurement of social impact.

    B. A number of papers useful in interpreting data on social change will be developed for use within UMA planning circles and by interested parties outside UMA.

17. Disseminate information about the model regional open learning system.

    A. Generalizable knowledge about UMA and what it has discovered about open learning will be widely disseminated.

B. An important international open learning conference will take place under UMA sponsorship.

C. A national depository of information about open learning programs will be continued.

D. Effective means of publicizing UMA programs and services for prospective learners will be developed.

18. Conduct several administrative functions, including summative evaluation.

There are a variety of functions which are germane to several elements of the five-year plan of operation, and administrative functions which are critical to the operation of UMA. Among those functions are:

A. To continue examination and exploration of factors leading to economic self-sufficiency.

B. To establish procedures to insure organizational capacity to use the kinds of evaluative and experiential data suggested throughout this proposal.

C. To begin to relate course costs to course effectiveness.

D. To encourage lease of UMA courseware and determine effective procedures and policies related to learning.

E. To provide opportunities and encouragement for professional staff development.

F. To provide leadership and management expertise for the entire operation.

G. To provide for policy recommendations to the UMA Board of Trustees about all the tasks identified in the five-year plan.

H. To arrange for an external summative evaluation of UMA.

These tasks, and others essential for the administrative and fiscal support of UMA, will be carried out under the broad category of administration rather than being subdivided among the various relevant tasks.

Budget

UMA has developed a tentative budget believed necessary to accomplish the tasks enumerated above. The budget has been calculated by task, for a 6,12, and 18 month timeline. Table 15 contains a summary of that budget.

SUMMARY

With the incorporation of UMA, the basic organizational structure of the central organization and its basic relationship to the state-operated delivery systems became relatively fixed. The exact configurations of the individual delivery systems remain to be determined as planning proceeds during 1975. The fiscal and organizational relationships of UMA with its participating states and institutions are also to be more precisely defined as planning proceeds.

As UMA moves into its five-year operational period, the accuracy of enrollment projections will be tested, as will accreditation arrangements and other operational plans. UMA must retain a high degree of flexibility during these initial stages, in order to be able to meet the unforeseen problems which always attend putting even the best-laid plans into action.

Table 15. Tentative UMA budget for 6,12, and 18 months.

Task	1/1/75- 6/30/75 (6 months)	1/1/75- 12/31/75 (12 months)	1/1/75- 6/30/76 (18 months)
1	$ 2,636	$ 4,937	$ 7,468
2	5,972	11,609	17,811
3	4,175	8,015	13,278
4	3,249	6,163	9.452
5	151,751	365,265	564,931
6	3,102	5,869	8,914
7	6,301	11,933	17,964
8	2,845	5,690	8,819
9	1,288,511	2,236,756	3,361,047
10	7,628	15,256	23,646
11	10,144	20,288	31,447
12	5,956	11,912	18,459
13	10,512	21,024	32,588
14	5,417	10,834	16,794
15	5,417	10,834	16,794
16	12,062	24,125	37,119
17	8,530	16,140	24,556
18	307,822	795,550	1,251,600
TOTAL DIRECT COSTS	$1,842,130	$3,582,200	$5,462,693
INDIRECT COSTS (8%)	147,370	286,576	437,015
	$1,989,500	$3,868,776	$5,899,708

CHAPTER VI
LEARNING CENTERS

WORK ASSIGNMENT #6

Develop a prototype resource center, and formulate an operational plan for a series of intra-state resource centers, as an integral part of the postsecondary delivery system ready for inauguration in January, 1975.

State delivery systems are the points of direct contact between the UMA regional open learning program and its target populations. Only through the delivery systems can UMA planners know the needs and objectives of a variety of adult learners, advise them in the design of their learning programs, and use local and regional resources to expand their learning environments. Since UMA's primary appeal is to a new audience of adult learners, it is necessary that every effort be made to attract people to and retain them in the program.

The methods for actual courseware delivery are determined, in part, by the nature of the individual courses themselves, but should have flexibility for use in different state delivery systems. UMA courses will employ a variety of media, which might include television, printed materials, audiocassettes, and a written component to appear in a newspaper. In Nebraska, for example, with full cooperation of the Nebraska Educational Television Commission, the nine-station statewide Nebraska Educational Television Network will serve as a major element in delivery of courses involving television. Arrangements have been made with the network for the statewide broadcast of television components of each course at times convenient to adult learners and without cost to SUN.

In addition a commitment has been secured from the largest Nebraska newspaper, the Omaha World-Herald, to feature the weekly newspaper component as a public service. Similar commitments are to be sought from other newspapers across the state.

The other course modules--e.g., audiocassettes, filmstrips, tests, and workbooks--are distributed directly to enrolled individuals through the mails. Arrangements have been completed with the Great Plains National Instructional Television Library to act as publisher and distributor of open learning materials to Nebraska students. Completed course material masters will be delivered to Great Plains, which will then be responsible for their duplication, packaging, and mailing to students. This service will be provided to SUN at cost, and will be subsidized totally by the materials charge which students will pay for each course.

Because of the critical need to be personally attentive to learner needs and to provide continuing feedback to those enrolled, a faculty member will be assigned to each course during the term of its delivery. These faculty members will (1) assess student achievement; (2) provide regular consultation to both learners and learning center staff members; (3) respond to telephone and written requests from students on a regular basis; (4) visit learning centers for tutoring and testing purposes; and (5) serve as one of the personal links between the SUN student and the delivery system.

A toll-free inward WATS line is available to students wishing to call faculty members with specific course questions, or to those desiring to call SUN staff about registration, records, fees, or other aspects of the operation. Automatic recording equipment takes learners' calls after hours, and response is made the following day. In addition, the use of computers for student management, administration, and feedback is under active consideration. In all these ways, SUN has attempted to plan a delivery mechanism that will personalize and individualize the provision of educational opportunities.

The focus of Work Assignment #6 was on one aspect of delivery systems, namely, the resource or learning center. During 1974, UMA, with SUN as the primary test site, planned for and actually began operating learning centers.

What is a "learning center?" Conceptually, it is a primary agent for accomplishing the objective of being able to meet the student where he is educationally and helping him design a learning program that will meet his interests and needs with maximum opportunity for success. Operationally, it is a means whereby learners can receive advice and counsel about courses available, can register for courses, can work on particular courses at their own speed, can meet with other learners and the faculty members responsible for course delivery, and can be helped to find other educational resources that might be useful--for example, correspondence courses, locally available on-campus or extension courses, or independent study opportunities under the guidance of a faculty member or local resource person. Physically, it is a location that might be on a local college campus, in a shopping center, in a library, or in a mobile van that moves from town to town. It will house the staff, contain complete sets of course materials, and provide places for learners to work independently and to meet in groups, thus increasing opportunities for interpersonal contacts between learners and staff.

This chapter reports work accomplished on this learning center assignment during 1975. The chapter contains three sections. The first section contains a summary of major outcomes resulting from work on this assignment. The second section details the plans developed for a network of learning centers within

Nebraska. The final section describes the operation during 1974 of some prototype learning centers.

It is difficult at this point in time to bring much analytical power to bear on the issue of learning centers. At the time of this writing, little experience has been gained in the operation of learning centers. Certainly, no complete evaluation of existing learning centers has been accomplished. Experience with learning centers in other kinds of programs has been to a minimal extent explored, but no in-depth analysis of the relationship of learning centers to the mission and procedures of UMA has, as of this date, occurred. Such an analysis is very much in order during the next year. What is presented herein thus tends to be descriptive of what was thought about and finally decided in terms of learning centers in Nebraska. More time, and more experience, are needed before the efficacy of these decisions can be determined.

SUMMARY OF MAJOR OUTCOMES

- Tentative plans for a system of learning centers in Nebraska were developed, with particular attention to roles, locations, and staffing concerns.
- Prototype learning centers were established and operated in four locations in Nebraska.
- A preliminary analysis of the role, expectations, and training needs of learning center staff was completed.

LEARNING CENTER PLANS

Tentative plans developed during 1974 by SUN call for the gradual activation over the five year period of a statewide network of approximately 25 learning centers. Locations for these centers are to be selected on the basis of geographical distribution of population in the state. Exact locations of centers would be predicated upon such factors as demonstrated need for a center in a community or region; convenience of the selected site to learners; availability of suitable facilities; and the presence of community, institutional, or business support in establishing the learning center. SUN has already established four pilot learning centers to support the Fall, 1974 offering of the first two SUN courses. The precedent of seeking active local involvement in establishing and operating learning centers is regarded by SUN as being of critical importance.

Roles of Learning Centers

It is anticipated that learning centers will play a critical role in individualizing educational opportunities presented to learners by the SUN delivery system. As the primary point of contact of the individual learner with SUN, the learning center is envisioned as performing a variety of services. During the initial period of operations, most of these services and functions relate to actual course delivery; but as SUN operations proceed, a broader role is seen for the learning center.

Learning centers could provide a broad range of services related to course delivery. They could provide a focal point for recruitment and enrollment of students at the local level, and could be a prime resource for publicizing SUN offerings in the outstate regions. The centers could also provide student assessment services, such as administering unit and final examinations, and could gather student data for use by UMA research and evaluation staff. Learning center staff could perform a variety of tutorial and counseling services, related both to SUN courses being delivered and to other educational resources available to the learner. The centers could also provide a place for individual students to meet with course faculty members, and with other students enrolled in the course. The centers could also house a complete set of components for each of the SUN courses being offered: print materials, video and audio cassettes. Thus a student who was unable to view the broadcast of a television program might view a tape of the program at the learning center; or a student needing additional review could find a complete set of course materials on file. This library function of the center is seen as especially significant, because it frees the learner of what, in some cases, might be inappropriate pacing imposed by the broadcast schedule and the publication of the newspaper component, thus allowing individual learners to proceed through the course at their own pace.

The broader functions envisioned for the learning centers include a wider involvement in counseling in non-course related areas. This wider counseling function would see the learning centers serving as local educational clearinghouses, equipped to put postsecondary learners of all sorts in touch with educational services, both traditional and nontraditional, available to them at the local, [illegible], regional and national levels. This role of the learning center implies a high degree of coordination between SUN and other educational agencies, and a broadened training program for learning center staff, to acquaint them in more detail with educational programs other than SUN and to sharpen their counseling skills.

If learning centers housed complete copies of all UMA course materials, a learner might enroll in UMA courses through the local learning center, independent of the regular scheduling of course offerings, which are necessarily tied to regular broadcast schedules. While this plan would never supplant the broadcast of UMA courses via the Nebraska Educational Television Network, since it would make course delivery depend entirely upon learner attendance at the learning center, the plan would greatly increase the number of options open to a learner in pursuing a course of study, particularly in modular courses. The realization of this role for learning centers would depend upon some modification of the arrangement by which UMA courses are made available to delivery systems. The prohibitive costs of video tapes might make this plan economically infeasible until technological advances provide a less costly means of duplicating video programming. But it is a plan that will be given serious consideration by UMA and SUN in the months to come.

Another role performed by the SUN prototype learning centers, and one that should increase in importance as operations continue, is serving as the local representative of SUN. SUN learning center staff currently perform a number of community relations functions. They prepare materials and give interviews to local press and media representatives, speak to meetings of local governmental and service groups, provide a point of contact with local educational institutions and agencies, and generally help to publicize SUN and its offerings at the local level. This role is important in securing local input to and involvement in SUN, and may well prove critical to the development of a comprehensive statewide program of services in the years to come.

Location of Learning Centers

SUN plans for a network of approximately 25 learning centers to blanket the state, with some weighting towards areas of greater population density. The four pilot learning centers in use during the initial period of operations cover the southern portion of the state from east to west. The next priority would presumably be for a center in northeast or north central Nebraska. The selection of sites for learning centers depends upon some degree of cooperative relationships with local institutions, agencies or businesses, and the availability of some local funding to help establish the center, as was the case with each of the four pilot centers. Such local involvement is important, not only because it keeps SUN's developmental costs down, but because it secures a firm commitment from the community to participate in the development of the SUN system.

SUN is considering a variety of sites for learning centers. Some might be established on the campuses of local universities, colleges, junior colleges, or technical schools; such an arrangement is currently in effect with Kearney State College. In some towns, the public library might serve as a SUN learning center. In fact, some 83 public libraries across the state are already cooperating with SUN as centers for student assessment. Some centers might be located in facilities shared with other extension services, as is the case with the Scottsbluff center, a cooperative venture with University of Nebraska Extension Division and Cooperative Extension Services. Some centers, like the one in Omaha, will be located in business or residential areas. SUN is also investigating the possibility of locating some centers in local businesses and industries, so that people might pursue their education where they work. Preliminary discussions have been held with representatives of the Nebraska Penal Complex with regard to opening learning centers at the State Penitentiary in Lincoln and the Women's Reformatory in York. Penal Complex officials recognize the need for such a center; in fact, 13 inmates were enrolled in SUN courses during the first offering period, and received regular visits from SUN course faculty and staff. If funding arrangements are finished, work on these institutional learning centers is expected to proceed. Preliminary discussions have been held regarding the establishment of a SUN learning center in cooperation with the existing postsecondary program on several Indian reservations. This matter will be investigated in more detail in the coming months. SUN is also considering a plan to make special presentations in homes for the elderly, and to provide learning center services in areas of concentrations of senior citizens.

Staffing

Each of the prototype learning centers is staffed by a full-time coordinator and a full-time assistant. Each center is open a total of about 40 hours per week, including a combination of evening and week-end hours to provide considerable accessibility for learners.

The coordinator is the director of the learning center, and is responsible for counseling learners in their educational and vocational goals, advising them in their educational programs, and tutoring them in individual courses.

The learning center assistant acts as receptionist and secretary, and is responsible for office work and records-keeping, and assisting the coordinator in his duties. The assistant should also have a strong educational background and be able to operate all equipment associated with the course materials, so that he or she can keep the learning center in full operation during the absence of the coordinator.

Learning center coordinators and assistants are given pre-service training by SUN and UMA staff to familiarize them with the course materials, prepare them for their roles as counselors and tutors, and otherwise prepare them for their jobs. Periodic in-service seminars are held to keep learning center personnel updated on SUN operations and UMA course materials.

PROTOTYPE OPERATIONS

Four learning centers were established in Nebraska during 1974 to support the SUN offerings of Accounting I and Introductory Psychology. One center was in Lincoln, physically housed in the Nebraska Center for Continuing Education. This center was established with the assistance of a $7,700 grant from the Lincoln Foundation and a $10,000 grant from the University of Nebraska Foundation. The Scottsbluff center is a cooperative venture among SUN, the University of Nebraska-

Lincoln Extension Division and University of Nebraska Cooperative Extension Services. The center is staffed by a SUN coordinator and assistant and an Extension Division Representative. The center is located in the facilities of the Panhandle Extension Service of the University. A grant of $5,000 was secured from the Bay State Foundation of Gering to assist in the establishment of this center. The Kearney learning center is located in the campus library of Kearney State College in south central Nebraska. These facilities are provided to SUN by the college. The Omaha learning center is in a business area of Omaha, near a major shopping center. These facilities are provided by the University of Nebraska at Omaha, though the learning center has no direct formal ties with UNO and is several blocks from the campus.

While complete data concerning the initial operation of these prototype centers will not be analyzed until mid-1975, preliminary figures indicate a total of 1,014 visits to the four learning centers thus far. The purpose of these visits, together with a description of the actual services provided by the centers, will be explored during 1975.

While learning center staff members officially began their employment in August, 1974, SUN courses did not begin until October, 1975. Therefore, at the conclusion of the 1974 grant period, learning centers had actually been in operation, working with learners, for three months.

The only major inquiry into the functioning of the learning centers during this period was a preliminary analysis conducted by the Office of Research and Evaluation of the role, expectations and training needs of the learning center staff of SUN. The survey was conducted as an in-house attempt very early to detect areas in which learning center operating policies might need to be altered and to ascertain areas in which staff development might be in order. The paragraphs which follow report the procedures and outcomes of this preliminary analysis.

Procedures

One of the initial activities of learning center staff upon joining SUN was to attend a week-long orientation in Lincoln. During that orientation period, learning center staff were given a handbook which contained, among other materials, a description of the activities in which they would probably engage. The activities of learning center staff were described in relation to the role of learning centers in the SUN program. In that no one was certain what demands the enrollment of learners would make on learning centers and their staff, it was desirable to have some means for learning center staff to report their experiences in some systematic fashion. One means selected for the purpose of recording this experience of learning center staff was a Staff Development Questionnaire.

The Questionnaire itself was developed in three sections. The first section adapted statements from the orientation materials regarding the role, activities, and competencies of learning center staff. In three separate questions, learning center staff were asked to report, through both closed and open-ended items: (1) the priorities which they held for the role of learning centers; (2) the frequency and importance of various activities which they performed; and (3) the knowledge, skills, and sensitivities which they desired to obtain or already possessed. The intention of the first section of the Questionnaire was thus to obtain a comprehensive statement of the role of learning centers and their staff.

The second section of the Questionnaire asked learning center staff to describe in narration from the expectations which they brought to the SUN program, and how those expectations had been affected during the first four months. One of the important aspects of the second section of the Questionnaire was the extent to which learning center staff felt they had support in doing their job, as well as how learning center staff would define their effectiveness.

The third section of the Questionnaire presented learning center staff with an opportunity to evaluate the training and development activities in which they participated and to recommend areas for future activities.

The Questionnaire was mailed on November 27, 1974. All eight learning center staff completed and returned the Questionnaire by December 30, 1974. The Questionnaire was completed anonymously such that no individual or learning center could be identified with the results. Furthermore, respondents were not identified by the position of coordinator of assistant. It was felt that these measures of confidence would support the openness and freedom of respondents.

Findings

Role of Learning Centers and Their Staff. The first item on the Questionnaire asked that learning center staff report their preferences for the services which learning centers could perform. An open-ended list of 14 potential learning center services was provided for completion by identifying each as "high priority," "moderate priority," or "low priority." When the items are scored "3" for high priority, "2" for moderate priority, and "1" low priority, the group results obtained are shown in Table 16.

The most preferred services for learning centers were: (1) referring students for credit by examination; (2) directing students into educational or training opportunities not offered by SUN; (3) maintaining student records; (4) organizing student group discussions; (5) surveying training or educational needs in the communities surrounding the learning center;

Table 16. The Preferred Services of Learning Centers by Their Staffs.

Rank Order	Score	Service
1	24	Referring students for credit by examination, e.g., CLEP
2	23	Directing students into educational or training opportunities not offered by SUN
3	22	Maintaining student records, including background information, courses enrolled in, grades obtained, etc.
4-5-6	21	Organizing student group discussions
4-5-6	21	Surveying training or educational needs in the communities surrounding the learning center
4-5-6	21	Cataloguing references for student use, e.g., college catalogues, newspapers, texts, reprints, etc.
7-8-9	18	Counseling students for vocational decisions
7-8-9	18	Tutoring students for special instructional needs
7-8-9	18	Maintaining logs of students' use of the learning center services and materials
10-11-12	17	Recruiting students for SUN courses
10-11-12	17	Testing students for academic achievement in a SUN course
10-11-12	17	Registering students for SUN courses
13-14	15	Getting students together for social purposes
13-14	15	Maintaining logs of activities of learning center staff

and (6) cataloguing references for student use. The least preferred services for learning centers were maintaining logs of activities of learning center staff, getting students together for social purposes, registering students for SUN courses, testing students for academic achievement in a SUN course, and recruiting students for SUN courses.

The second item on the Questionnaire listed a set of activites which learning center staff might perform. Each staff member rated the frequency, from "very often" to "never," with which each activity was performed, and then judged the importance of each activity for (a) the SUN administration, and (b) himself or herself, personally.

The most frequently performed activities reported by learning center staff were: (1) insuring that all SUN course components are readily available in the learning center; (2) maintaining pertinent records on all students; (3) keeping close contact with students to maintain interest and motivation, and to reduce attrition; and (4) operating and overseeing the maintenance of all technical equipment located in the center. The least frequently performed activities reported by learning center staff were seeking out qualified individuals to serve as additional tutors or counselors, arranging social events such as open house, arranging group meetings for students wishing to study together, and serving as liaison between SUN and other surrounding educational institutions.

Two additional activities mentioned by learning center staff as frequently performed were clerical office procedures and providing the center with library materials on adult education and open learning.

Given the frequency with which learning center staff to date performed certain activities, how important do learning center staff perceive those activities to be for the SUN administration and for themselves? Table 17 provides a summary

Table 17. Rank Ordered Importance of Activities Performed by Learning Center Staff

	Activity (Ordered according to frequency of performance)	Perceived Importance to SUN Administration		Importance to Learning Center Staff	
		Mean Score	Rank Order	Mean Score	Rank Order
1	Insuring that all SUN course components are readily available in the learning center.	.338	1	.408	8
2-3	Maintaining pertinent records on all students.	.464	9	.496	13
2-3	Keeping close contact with students to maintain interest and motivation, and to reduce attrition.	.358	3	.129	1
4	Operating and overseeing the maintenance of all technical equipment located in the center.	.595	14	.579	16
5-6-7	Recruiting students in the local area.	.564	13	.590	18
5-6-7	Assisting students with the use of all materials in the center.	.462	8	.402	7
5-6-7	Advising students who contact the center by telephone.	.412	5	.308	6
8	Keeping informed on all educational programs available to meet individual needs.	.351	2	.199	3
9-10	Relating to the local community and otherwise serving as the local public relations officer for SUN in the particular area.	.456	7	.430	9
9-10	Assisting students with course and general delivery problems.	.440	6	.282	5
11-12	Counseling students visiting the center.	.493	11	.168	2
11-12	Working to find additional ways to personalize and individualize the SUN instructional process.	.373	4	.275	4

Table 17 (cont.)

Activity (Order according to frequency of performance)		Perceived Importance to SUN Administration		Importance to Learning Center Staff	
		Mean Score	Rank Order	Mean Score	Rank Order
13	Serving as a liaison between SUN and "host" institution.	.720	17	.620	19
14-15	Serving as a learning consultant for the center.	.473	10	.448	10
14-15	Supervising the achievement assessment of all students coming to the center.	.738	18	.539	15
16	Representing SUN to the educational institutions in the area.	.513	12	.532	14
17-18	Serving as a liaison between SUN and other surrounding educational institutions.	.629	16	.588	17
17-18	Arranging group meetings for students wishing to study together.	.819	20	.494	12
19	Arranging social events such as open house.	.778	19	.863	20
20	Seeking out qualified individuals to serve as additional tutors or counselors.	.621	15	.464	11

of data to address this question. In that staff employed different scales, e.g., 1-10 and 1-20, in responding to a rank order of the activities, all rank ordering was converted to a percentage. The lower the percentage the higher the rank order of the importance of the activity. For example, on a scale of 1-20, an activity rank ordered as 5 would have a value of .250, while an activity rank ordered as 15 would have a value of .750. On a scale of 1-10, an activity rank ordered as 3 would have a value of .300, while an activity rank ordered as 8 would have a value of .800. In this manner it was judged that the relative importance of the activities could be reported even though respondents used different scales in their rank ordering.

Several observations can be made regarding Table 17. Learning Center staff rated the importance of three activities significantly higher for themselves than that which they perceived for the SUN administration. Those three activities are: keeping close contact with students to maintain interest and motivation, and to reduce attrition; counseling students visiting the center; and, arranging group meetings for students wishing to study together. Less importance was attached by learning center staff than that perceived for the SUN administration to insuring that all SUN course components are readily available in the learning center, to maintaining pertinent records on all students, and to recruiting students in the local area. The relative importance of the remaining activities are congruent between the learning center staff ratings and the perceived values of the SUN administration.

When comparing importance and frequency of the activity, it appears that learning center staff would prefer to increase the frequency of: seeking out qualified individuals to serve as additional local tutors or counselors, keeping informed on all educational programs to meet individual needs, counseling students visiting the center, arranging group meetings for students wishing to study together, and working to find additional ways to personalize and individualize the SUN instructional process. On the other hand, it appears that learning center staff would prefer to decrease the frequency of: maintaining pertinent records on all students, insuring that all course components are readily available in the center, recruiting students in the local area, and operating and overseeing the maintenance of all technical equipment located in the center. The remaining activities appear to be congruent between frequency of performance and the importance of them attached by the learning center staff.

The third item on the Questionnaire listed a set of competency areas in which learning center staff may already possess or desire requisite knowledge, skills, and sensitivities. Results from this item indicate that some learning center staff already possess, but others desire further, capabilities in public speaking, counseling, identifying learning resources in the community, referring individuals in need of remedial or study skills, referring individuals to educational experiences other than those offered by SUN, evaluation of postsecondary educational objectives and programs, and employing instructional technologies and materials. New areas recommended for additional training include interpreting UNL to the public, analyzing local educational means, applying principles of participative management, identifying specific resources in other postsecondary programs, CLEP, Extension Division, adult learners and their needs, and open learning philosophies.

Learning Center Staff Expectations. The second part of the Questionnaire dealt with the expectations which learning center staff brought to the SUN program and how those expectations were affected during the ensuing four months. In addition, learning center staff were asked to comment on the extent of support which they felt in the job and how their effectiveness could be improved. In that the responses to this item in the Questionnaire were in essay form, the method of reporting here will draw on excerpts from those comments.

1. Expectations held by learning center staff for the SUN program. A range of optimistic expectations were held by learning center staff on joining the SUN program. For example,

> I hope to be able to assist many adult learners, both SUN students and adults not enrolled in SUN, to find educational experiences that they would find worth their time and effort. I even hoped that I would be able to guide some learners in their total program or direction.

Another respondent expressed the following expectations:

> To find out about the whole field of continuing education from a macroscopic perspective; to find out about the adult learner, first-hand (i.e., types of adult learners, needs, course adaption to, expectations, etc.); and, to estallish personal contact with personnel in other postsecondary continuing education programs in my area.

A third learning center staff member recalled:

> Last August when I was hired for the position of staff assistant with the SUN program, I had a vague idea of what SUN was. In the past adult education had always brought to mind visions of ladies taking decoupage or cake decorating several evenings a week. The idea of thousands of adults striving to get "piece-meal" college credit was totally new and very intriguing.
>
> The week we spent in Lincoln charged me with enthusiasm for what the SUN program's main objective was; bringing the classroom to the adult learner in his home via T.V., tape recordings, newspaper, etc. The nontraditionalism of the concept intrigues me. For too long educational philosophies had been in an ivory tower and "missing the boat" in terms of adults; they were unwilling to put with the hassles, barriers, and inflexibility encountered all too often on traditional campuses.

From another perspective, the following account is given:

> I saw SUN as a separate entity, but have since learned to appreciate that it is but one component of the University of Nebraska system. When SUN talked about course development, I imagined only that it was building a curriculum based entirely on adult indications of interest from existing University of Nebraska courses. In other words, I realize now that I regarded SUN as a separate institution for adults to acquire college credit. Obviously, I did not give much thought to what "adults" were, but I sense now that I was thinking of people with full-time jobs who were unable or unwilling to leave their homes and/or families. This concept was corrected at the training session in Lincoln prior to the opening of the center; but I still carried the notion that SUN was a kind of "savior" and that students would flock to the program.
>
> Because SUN appeared to be such a high powered organization and because it appeared to use a highly sophisticated "systems approach" to solving problems, I wondered how much opportunity an individual at some small center would have in terms of expressing any creativity or originality. I rationalized and thought "no matter how much money SUN has, and no matter what a model system it appears to have, it will, finally, be made or broken by those who are the front-liners."

2. The impact of the SUN program on learning center staff expectations.

The realities of the SUN program apparently changed some of the initial expectations held by learning center staff. For example,

> The picture that was originally painted on learning centers is quite different from reality. From a rather lengthy list of furniture and equipment items needed, SUN has provided only a couple of items. If it weren't for the kindness and cooperation from...staff, we would all be sitting on the floor instead of chairs. This is only one example.

Another respondent reported it this way:

> Although I did harbor some uneasy feelings about the purpose and functions of the Learning Center as an optional resource center, I was confident that it would all fall into place as the whole thing got underway. As our student enrollment materialized, we soon discovered that our area SUN students, for the most part, did not live near our Learning Center and therefore we served a limited function for them. They had the

> toll free Lincoln number for course problems and we merely implemented SUN directives; test scheduling, surveying, technical problems, etc.

The lack of student use of the learning centers was a harsh disappointment for some:

> The biggest disappointment with the learning centers, has been the lack of student use. The distance involved between learning centers and students, together with the push on college at home, has kept student use of centers very minimal. I feel that if students could register with the center, take tests in the centers together with the other uses they might make of the center, the effectiveness of the center would be much better.

Another respondent had this to say:

> Originally, I had envisioned rather a large amount of student contact. Because this was not a reality for us, we settled for quite a bit of telephone contact. We try to talk to our students on the average of 2 to 3 times a month. I find this an adequate substitute for the face to face interaction I had originally envisioned.
>
> As for my job expectations, there has been quite a bit of ambivalence due to low student enrollment in our area. There were many times when I have felt that there was a need to justify my job and to some extent, my activities. My original idea of my activities did not become a reality and I had to search for new direction. Because of our low student enrollment implementing SUN, memos and directives did not involve all my time. I have endeavored to acquire better skills in educational counseling, identifying resources available in the community which are potentially applicable for learning experiences, and in acquiring any skill that will aid me in becoming an effective member of our staff in terms of what functions our learning center should be directing itself.

Reactions to the lack of students in the learning centers caused one staff member to report the following:

> I expected our learning center to have an immediate impact on the area. It did not. I expected our learning center to be constantly filled with people. It was not. I expected the staff to be so busy counseling, advising, cooperating, assisting, tutoring, etc, that the center role would be determined by these activities. It was not. I expected the SUN courses to attract so many students that their interests and needs would fully monopolize staff time. They did not. The result was that my

> original expectation of being able to make a difference was realized not because of hordes of students, but through the need to get out and promote the SUN program, to establish contacts, to develop a rapport with existing educational institutions, and most importantly, to encourage the SUN students that we did have.

Another learning center staff member expressed similar sentiments:

> Many of my expectations upon entering SUN were personal and highly optimistic--perhaps unrealistically so. I foresaw an extreme personal challenge and a busy schedule. However, since the program is not yet in full swing I still hope for, things are moving much slower than I had anticipated and my "duties" are no more than those of a receptionist-clerk. In a way these expectations can be readdressed to my hopes for the LC. Our workload is not full. Perhaps this is due to the fact that many students are so entrenched with the idea of "college at home" that they have no need and less desire to come to us. Yet, too, this question may be premature since some of our activities are hindered by a budget (?). Once our future is sure, I'm sure our priorities and activities will change.

Lack of knowledge of the SUN program among residents in the state also revised some of the expectations of learning center staff. For example,

> I learned the hard way that a lot of people simply had not heard about SUN. Those who had for the most part already had degrees and were interested in graduate and advanced courses. I learned too of the limitations of the news media, i.e., only a certain segment of the population read newspapers and watch TV news; that the Omaha World-Herald is not necessarily read widely because it is the "state" newspaper; and that education news frequently is read only by educators. In addition, the limitations of having only two courses ready to go did not make a realistic impact on me until I got out into the field.

However, amidst the problems of initiating a new program, learning center staff still report optimism:

> Despite the fact that I regarded SUN as almost computerlike in terms of how it was creating its program, I also regarded its final product-bringing education to people-as a mission that I could become a foot soldier for willingly and enthusiastically. That notion has not changed. In fact, it has become the central point of my philosophy for the center, but that philosophy was not developed without some pain and frustration.

> And that experience, in retrospect, was worth a half-dozen courses scattered throughout adult education, human relations, the mass media, counseling, administration, and recruiting techniques.
>
> What I learned was that people do have educational needs, but that they are as diverse as the people themselves. Rather than the learning center serving an in-house kind of function, it appears that for the moment it is serving as a catalyst for out-reach kinds of activities.
>
> Furthermore, my belief in the potential of SUN has not diminished, but my expectations for that potential are based on its ability to respond to its mission with even more vision than it has had in the past. By this I mean that it is not enough to bring education to the people. They want and need to learn about things that are relevant to them personally, and they want that education readily accessible.

In the same stream of feelings, another respondent reported:

> I still feel the SUN potential is fantastic. It can help so many people and in today's world where people feel a need for higher education whether for tangible reasons or for personal fulfillment, SUN is the perfect answer. This is especially true for an area such as Nebraska where rural distances predominate and traditional schooling is not always feasible. And most of all the personal contact afforded to a student if he wishes it may keep the drop-out percentage down and also serve to encourage.
>
> When I first learned of SUN, I had an immediate faith in it. I expected many interested and curious people and I expected that these people would be enthusiastic students. On both counts my beliefs have been reinforced. I also believe that SUN students could possibly learn more, and more easily, than the traditional campus student. Again I feel my assumptions seem to be correct from what I have learned from talking to students. And most of all the enthusiasm of the average student does not wane even during the difficult lessons.

Part of the problems encountered during the intial weeks of learning center operations related to learning center staff knowledge of the project:

> Prior to joining SUN, I really had little knowledge of the project. However, following the week-long seminar in Lincoln, I felt that I did have knowledgeable account of the entire program. Of course, since beginning of the program and the opening of the learning center, I have continued to fill in various phases of the program. At this point in time,

> I now feel quite comfortable with most aspects of the program as far as basic understanding and function is concerned. I still have some reservations following the last meeting in Lincoln. The general meeting I am referring to, in which I felt there was considerable difficulty in describing what SUN is, what it is doing and where it is going. I was most concerned because after more than two years, I didn't expect that much difficulty in getting to a more common agreement. I am aware, however, that due to the nature of the project, this is not easy to do.

However, to other learning center staff, expectations have been partially met through:

> Papers, summary of presentations, meetings, and resource people who have visited with us have been quite helpful; personal contacts with students have done what could never be duplicated in any book.

Acceptance of some problems and constraints appear in the expression of several learning center staff. For example,

> Now that we have begun operation, I can see that what I did expect of the center, really cannot happen with the program in this early stage. It is necessary, therefore, for us to adjust our thinking and view with more reality, how it will function and how we must operate within those limitations. As the program expands, both with students and centers, I can see a vast improvement possible as far as center concepts are concerned.

Another respondent puts it this way:

> In this city I feel good work could be done in getting courses offered that would assist the business community. That is courses directed at definite needs of certain business areas. Being 3 months into the program and offering two courses (that every school offers), I have not had great success nor did I expect to this soon. I am old enough to be patient in most things.

One learning center staff member expressed intense frustration in answering the question:

> My expectations regarding the SUN learning centers have been so riddled from furniture to function that...I would prefer not to answer this question.

Perhaps some of the problems encountered during the early months of SUN learning centers will be overcome during the future offerings of courses. As one respondent reported:

> I feel many of these comments will be invalid once the second batch of courses begins. We will have repeat students and those who have learned from friends about us. Then also, the LC will be there from the beginning of recruitment.

And, to make full circle in the comments regarding the impact of the SUN program on learning center staff:

> The learning center is the place where there will be contact with the learners. This makes them very important in the program and satisfying to work with.

3. The effectiveness of learning center staff. What factors impinge on the present and future effectiveness of learning center staff? Responses to this question can be found in the comments of several learning center staff. For example,

> I think my effectiveness will depend on my knowledge of total educational offerings in the area and understanding of adult learners.

Another learning center staff member expressed this concern:

> Because of the experimental nature of the SUN program, no real precedent for learning centers or the type of staff needed had been established. It appears to me that the learning centers may be on the road now to having an identity in terms of roles and functions, but I wonder about the learning center staffs.

With regard to learning center coordinators, one perception was that:

> The coordinators represent a diverse background of experiences, and all seem to have the capacity to adapt to the evolving responsibilities of the centers. It seems to me that the over-riding factor involved in this is their prior experiences in higher education.

What about the effectiveness of assistants in learning centers? One respondent put it this way:

> As far as my effectiveness goes, I feel I would be more so if I were given more responsibility. I have never quite

> figured out the status of the staff assistants in the eyes of SUN central. Are we clerical help who is capable of responsibility or responsible staff who are capable of clerical duties? Of course, this too will change once the program is booming. Then the issue will force itself merely because one person will not be able to handle the whole schmeer.

Another respondent had this to say:

> I have also become aware of the need to redefine the job responsibilities that are expected of the staff assistant. Many of my activities have gone beyond what was originally envisioned, as the role and responsibilities that the title maintains. I can see that the staff assistant's role can have more impact as SUN evolves. With growing student enrollment the amount of one-to-one student contact, can in itself, become a full-time activity. As the coordinator becomes involved with the ever increasing demands of recruitment, community public relations, public speaking engagements, etc., the responsibility for handling center activities while the coordinator is away falls on the staff assistant.
>
> It would seem that the assistant must have many of the skills and qualifications of the coordinator. This is an important consideration as more learning centers are planned for the future. A whole new dimension can be added to the staff assistant position. Many times I have felt that we do much more than at first anticipated, I find this to be very exciting and challenging. I am eager for the challenge and hope that SUN central will come to realize how potentially important the staff assistant position can become in the future of SUN.

What is the identity of assistants in learning centers and what satisfaction obtains in terms of job fulfillment? One staff member offered these observations:

> I suspect, however, that none of the coordinators really understood their assignment upon first accepting the job and immediately they were asked to select a staff assistant. Not fully understanding their own role, they were put in the position of determining the kind of person they needed. Each one picked a person with at least an undergraduate degree. In retrospect, I wonder if we did not err by not trying to select a person with strong secretarial expertise rather than one whose educational background prepared them for a position unlike that of a secretary.
>
> As the learning centers develop, I am sure that coordinators are getting a great deal of satisfaction in terms of job fulfillment. But what about our staff assistants? Have they been relegated to a secretarial position? Do we, in fact, need a staff assistant

> who is more than a secretary? If we do not, what should be done about our assistants who undoubtedly have aspirations for being more than a secretary? What responsibility should we feel toward them in terms of job fulfillment? When they were hired they were identified as staff assistants. Since then they have often been referred to by SUN central as assistant coordinators. Does SUN central expect them to perform as assistant coordinators or as staff assistants? And what does SUN central see as the difference between the two titles? Their expectations for their positions and their image of their own self-worth need to be dealt with at both the SUN central and the learning center levels.
>
> My recommendation would be to have each learning center coordinator and staff assistant re-write their job descriptions now that the centers are operational. Each coordinator should evaluate the job description written by the assistant and make appropriate changes from their vantage point of responsibility for the center. On the basis of these new job descriptions, perhaps a more descriptive title and responsible function can be developed for the staff assistants. If the job descriptions point toward a position that is secretarial in nature, at least then the staff assistants will be better apprised of the potentiality of their positions. In either case, my feeling is that SUN central should be advised of the center staff findings, and then react and/or respond according to its frame of reference. My recommendation is based entirely on where the learning centers are now, and SUN central's vision of the future may cast a different perspective on the matter.

Another recommendation for improving the effectiveness of learning center staff was:

> As we live in an area with limited library facilities, it has been difficult to find material pertinent to the areas in which I'm seeking a better understanding, i.e., adult education, adult learners, open learning and nontraditional education. I feel that it would be of great assistance to me and I'm sure other learning center staff, if some thought was given to supplying us with some material of this nature. Also, we have very limited information concerning academic career planning.

4. Support which learning center staff have in doing their jobs. To what extent do learning center staff feel they have support in doing their jobs? One respondent reported:

> Overall, pretty good support (the responses to my telephone calls concerning SUN student affairs have been followed-up in a prompt fashion).

Another staff member made this comment:

> I feel that support from the community and SUN central towards the centers has been just great. Anytime help has been needed it has been there. The willingness of everyone to help in any way they can, to me, is the strongest point of the program.

The feeling of SUN administration support is also shared by another:

> The central office I feel has been helpful and supportive in terms of any problems that have arisen involving our students. Their willingness to offer assistance has been most gratifying, and support from them most useful.

Again, in the positive stream, another staff member reports the following observations:

> To the credit of SUN central, the learning centers have been allowed to evolve in response to local situations. That is to say each learning center has been able to read and respond to the unique situations of the region which it serves. There are specific SUN directives and responsibilities that make each center similar, but conformity to a preconceived "packaged idea" of the total role and function of each center has not been the order of the day.
>
> In addition, people at SUN central make themselves accessible to center staff. There is no hesitation whatsoever on the part of center staff to contact key personnel at SUN central either by phone or in person. Although the SUN central staff is fairly large, responsible people at SUN central have made a point of making sure that center staff meet key people who can be of assistance to them.
>
> Whenever center staff can articulate the problem they need assistance with, someone at SUN central usually can help. I particularly commend the secretarial staff at SUN central for their constant cheerfulness and helpfulness. Despite our frequent contacts with SUN central, they are always cordial and cooperative "above and beyond."
>
> The willingness of faculty members to visit the centers is a commendable thing, and their visits have enabled the staff to understand the courses better and, in turn, to interpret course objectives to students.
>
> For our center, student recruitment will continue to be a major priority for some time to come. Any assistance that we can get from SUN central will be helpful.

However, a tinge of negativism is portrayed in the following comments by a fifth staff member of a learning center:

> I feel a certain amount of job support in that every employee of SUN is made to feel one of the team. But I do feel that there is an attitude at SUN central that refuses to make the best use of the LC. The student is almost compelled to call or write Lincoln in the case of a problem. The idea of AT HOME study is so stressed that the LC seems an afterthought to the student who would rather get to the head man and clear up a problem that we could easily handle. Even though the student has received information from us stating our purposes and availability, most of them made initial contact with central and have never received a strong suggestion from Lincoln to make use of our facilities. We are always stressed as an extra resource. Perhaps some sort of info sheet stating who to call when would help. And since most students are going to make use of a toll free number rather than call us long-distance, they should be told to leave the message that they want the LC to get in touch with them rather than having Lincoln handle the situation. When this happens, the student's idea that the head guy is best is reinforced.

5. Problems in establishing learning centers. Several comments were made by learning center staff regarding the problems encountered during the early weeks of opening learning centers. For example,

> There were, I feel too numerous problems involved in setting the learning centers in action. I am referring to the nuts and bolts problems. This I am sure we could avoid in future openings. Such as: locations, equipment, staffing, communications, etc.

Ways in which problems could be dealt with are suggested through the following comments:

> Have all new learning centers fully equipped in advance of their openings (e.g., electric typewriters, no 1950 models, please), phone hooked up, chairs available, etc.
>
> Try to let the learning centers know well in advance (at least 2 weeks) when the course consultants plan to visit so that we can get notices out to students in sufficient time.
>
> Would also suggest including a chalk board in all learning centers for use by the course consultants when they visit and review with the students.

> While it is understandable (printing and mailing problems, etc.), a significant effort should be made to get delivery materials to students ahead or on time. The rationale is simply this: In the beginning, we were led to believe that we could tell students that they could work on the course at their own rate (behind or ahead of schedule) and if the learning centers do not have all the necessary components ahead of time, then students cannot possibly work ahead of schedule. Alternatives: get materials to students ahead of time or do not lead center staff or students to believe that one could work ahead of schedule. Hopefully, this will be corrected when future course offerings come into play.
>
> I there are errors in study guides or texts, all revisions should be mailed immediately to each student enrolled in the course. We lose our credibility if we constantly give them wrong answers add the students themselves are not informed in writing as to errors in learning materials--it's a common courtesy to keep them informed about this. Whose responsibility? -- the learning centers or (in my opinion) the course consultant should assume the responsibility for getting this done.

Staff Training and Development Recommendations. The third part of the Questionnaire requested learning center staff to evaluate the training and development activities held for them and to recommend future activities for their professional growth. These data, while not reported herein, provided some guidelines that will be useful in planning staff development activities for 1975.

CONCLUSIONS FROM THE FINDINGS

Conclusions. Prior to synthesizing the substantive findings of the study, it is important to note some of the important methodological limitations. First, responses to the quantified items on the questionnaire are reported in group of "normative" fashion. As demonstrated in the data, individual responses to a given item may vary considerably from the group or average response. Therefore, one limitation of the study is the lack of confidence one can hold that the group findings are representative of any one individual respondent.

A second limitation of the study is the assumption that all respondents had the same referent for a given item. For example, when responding to Item #1 on the Questionnaire ("To what extent do you think that learning centers should perform the following services:"), to what extent were the preferences of "significant others" influential in the priority ratings? Or, another example, in the perceptions of important activities, who served as the reference for the SUN Administration? the Executive Director? the Provost? the Associate Provost? the Dean? the Director of Student Services? the Director of Academic Services?

A third limitation of the study is that the findings are time- and condition- bound. In large part, the data generated in the study refer to perceptions, preferences, attitudes, and sentiments. Some may refer to these as "soft" data, which over time can be expected to change, perhaps drastically. The SUN program was in its early formative stage when the data for this study was collected. The data themselves are indicators of an evolving program. Nevertheless, the findings should be viewed as important "base-line" data which have not only historical significance, but also contain a stimulus for corrective action.

Given these limitations, what follows is a summary of the findings from the study:

Learning center staff report that they performed a wide range of activities for the SUN program. For purposes of defining the current role of learning centers in the SUN program, the activities of learning center staff can be arranged within three functions: a course-related function, a clearinghouse function, and a management function.

Perhaps most of the current activities of learning center staff, as a group, relate to course activitées. Four of the seven most frequently performed activities reported by learning center staff were: ensuring that all SUN course components are readily available in the learning center; keeping close contact with students to maintain interest and motivation, and to reduce attrition; recruiting students in the local area; and, assisting students with the use of all materials in the center. Other course-related activities performed by learning center staff, in order of decreasing frequency, include: assisting students with course and general delivery problems, working to find additional ways to personalize and individualize the SUN instructional process, supervising the achievement assessment of all students coming to the center, and arranging group meetings for students wishing to study together.

A second set of activities performed by learning center staff relate to what may be termed a "clearinghouse function." These activities include, in order of decreasing frequency: advising students who contact the center by telephone, keeping informed on all educational programs to meet individual needs, counseling students visiting the center, serving as a learning consultant for the center, and seeking out qualified individuals to serve as additional tutors or counselors.

A third function which can be defined for learning centers is management of activities (a) within the learning centers and (b) between the learning centers and other agencies. Within learning centers, staff maintain pertinent records on all students in their areas, operate and oversee the maintenance of all technical equipment, engage in clerical-office procedures, and provide the center with library materials. Between the learning center and other agencies, staff engage in relating to the local community and otherwise serving as a local public relations officer for SUN, serving as a liaison between SUN and "host" institution, representing SUN to the educational institutions in the area, serving as a liason between SUN and other surrounding institutions, and arranging social events.

To what extent is there agreement between the SUN administration and learning center staff on the importance of various learning center activities? As a group, learning center staff perceive the SUN administration to stress course-related activities to a greater extent than "clearinghouse" or management activities. Learning center staff, as a group, would prefer that more importance be attached to the clearinghouse function when compared with the course-related function of learning centers. For example, the most highly preferred services of learning centers by the staff were (1) referring students for credit by examination, and (2) directing students into educational or training opportunities not offered by SUN. The SUN administration and learning center staff are in apparent agreement that management activities should be the third area of importance.

To what extent are learning center staff equipped to do their job? Before this question can be answered, it is necessary to ask two related questions:

What job was learning center staff expected to do?
and
How have the job expectations of learning center staff changed?

The comments of learning center staff on Part II of the Questionnaire are revealing. As a group, learning center staff represented themselves as highly optimistic and idealistic on joining the SUN program. The expectations of learning center staff, for the most part, were that learning centers had a central place in the SUN program; that large numbers of students would desire counseling, advising, and other services of learning centers; that learning centers would help elevate the SUN program to a high level of visibility in adult education in the state; and, that a high degree of personal satisfaction and professional growth was obtainable as learning center staff. What learning center staff reportedly found in reality was that students at times chose to use the toll-free telephone line to SUN faculty and administration, thereby not availing themselves of the learning center; that learning centers were viewed in strategic locations as an alternate, supplementary resource in the SUN program; that fewer students contacted learning centers than expected; and, that procedural and coordination problems marked the early weeks of learning center operations. While some learning center staff recognized a great distance between the beginnings of a new program and the realization of its goals, patience and continued optimism was expressed for the evolving program. All learning center staff, to some extent, revised their initial job expectations.

Given the experimental nature of the SUN program, several factors, then, impinge on the effectiveness of learning center staff. One factor is the current level of capability exhibited by learning center staff. It appears that learning center staff desire additional competencies (knowledge, skills, sensitivities) in the following areas:

1. Competencies related to the course-related function of learning centers
   a. identifying and referring individuals in need of remedial or study skills.
   b. employing instructional technologies and materials.
   c. assisting individuals in learning assessment and goal setting.

2. Competencies related to the clearinghouse function of learning centers
   a. Counseling and testing individuals, e.g. through CLEP.
   b. identifying and referring adults to learning opportunities in the community.
   c. evaluation of postsecondary educational objectives and programs.
   d. identifying specific resources in other postsecondary programs in adult and continuing education.

3. Competencies related to the intra-agency management function of learning centers
   a. analyzing and applying principles of participative management.
   b. leadership for learning centers and staff assistants.
   c. financial aid available to students.

4. Competencies related to the inter-agency management function of learning centers
   a. Public speaking.
   b. explaining existing higher education opportunities to the public.
   c. continuing education, open learning.

A second factor impinging on the effectiveness of learning center staff is the intended role of coordinators and assistants in relationship to the SUN administration and faculty. Learning center staff report, almost unanimously, that they felt support from the SUN administration, other staff, and faculty. However, the role identity of assistants, as well as coordinators, was not clear to learning center staff. For example, is the main job of an assistant that of a secretary-clerk or that of a professional educator? Comments by learning center staff elaborate on this point.

A third factor affecting the jobs of learning center staff is agreement as to how effectiveness is to be defined, both qualitatively and quantitatively. At the present time, it appears that learning center staff lack clear guidelines as to how their job is evaluated or where they should place priority for the expenditure of resources.

A fourth factor impinging on the effectiveness of learning center staff is the problem of establishing a new enterprise like a SUN learning center. Procedural and coordination problems have been encountered during the first four months of learning center operations.

A fifth factor affecting learning center staff is the organizational relationship of SUN to UMA. Between the lines of comments made by learning center staff, one gets the impression that there exists concern for the actual and potential relationship of SUN and its learning centers to UMA. For example, to what extent will UMA provide resources to SUN and its learning centers for the continued development of open learning in Nebraska? Also, to what extent will UMA direct the activities of SUN and its learning centers in Nebraska?

Finally, a sixth factor to be noted here as impinging on the effectiveness of learning center staff is the organizational relationship of SUN to UNL and other institutions in the state. Is SUN a fourth institution in the University of Nebraska system? Where will SUN eventually get its financial support? How does SUN differ from other adult and continuing education programs? Are SUN and its learning centers duplicating services and clientele of existing programs? If so, can SUN legitimate its existence? How will the organizational dilemma be resolved?

SUMMARY

This, then, represents the activities undertaken during 1974 in response to this assignment. The letter of this assignment was indeed accomplished: a prototype center (actually four centers) was developed and a plan for additional centers was also specified. These are first steps, however. What must follow is a thoughtful examination of what actually happens in learning centers, and whether those activities and outcomes justify the costs incurred. In some respects, UMA and SUN become trapped in their own rhetoric: if people take seriously the idea of "college at home," they may feel little persuasion to utilize learning centers. The cycle is a difficult one, for without learning centers the recruitment power of SUN may be lessened, but without adequate enrollments, learning centers may not be cost-effective in the overall delivery system.

Once again, more experience, and more considered thought, must be obtained before rational decisions about learning centers can be rendered.

CHAPTER VII
COURSE ACQUISITION AND ADAPTATION

WORK ASSIGNMENT #7

> Develop and apply a practical model for the evaluation and acquisition of extant courseware materials, and develop a plan for adaptation of such courseware to the SUN concept.

This work assignment addresses the desirability of gaining experience in acquiring and adapting course materials produced outside of UMA, for use in UMA states. To the extent that acquired courses can be obtained to fulfill UMA curricular needs, overall costs of developing the entire curriculum can be reduced; needless replication of suitable extant courseware can be avoided; and cooperative as well as coordinative relationships can be established with institutions and instructional materials producers beyond the UMA boundaries, thus broadening the impact and potential of the UMA program.

These advantages are clear and important. There are also some limitations, including the possibility that UMA may not be able to act as a distributor of acquired courses, thus affecting lease income possibilities. Without some experience in trying to acquire courses, though, it would be impossible to make any definitive judgments about whether the benefits gained from a major effort to acquire courses outweigh the costs. Consequently, UMA moved during 1974 to develop acquisition procedures. The utility of these procedures will be explored during 1975.

This chapter contains four sections. The first section summarizes the major outcomes resulting during 1974 from work on this assignment. The second section briefly reviews the history of UMA/SUN course acquisition prior to the 1974 grant period. The next section details the current UMA course acquisition plan. The final section addresses some of the issues involving adaptation of acquired courses.

SUMMARY OF MAJOR OUTCOMES

- Using previously developed acquisition procedures, a course in Introductory Psychology was acquired by UMA.
- A general plan for course acquisition has been developed.
- One experiment with adapting acquired course materials was conducted.

PRE-1974 ACQUISITION HISTORY

Prior to the hiring of the SUN (now UMA) Director of Course Acquisition on May 15, 1974, the search for and evaluation of materials for adoption by SUN was conducted by a consulting firm, Robertson Associates, Inc. The curriculum area given first priority by SUN for consideration was psychology, since this had been one of the highest-rated areas in the market surveys, and also because preliminary information indicated that potentially acquirable materials existed in this area.

It is also important to note that the consulting firm was charged with finding and evaluating course materials which had television as a central component. Three of the preliminary criteria used to screen potential materials were:

- Television must be a major element in the course. This does not mean that courseware with a television component will be eliminated from consideration (since SUN might elect to produce a television component to accompany materials in other media), but will be given low priority for acquisition for the time being.
- Television materials must be in color, preferably on 2" quad high-band tape. Film materials must also be in color, on double system (separate picture and sound

negatives, original). Only when subject matter is highly unusual or totally unavailable in color will monochrome materials be considered.

- Any materials which fall below the production and technical standards currently accepted by national distributors of television, audio, and film programs will not receive prolonged consideration.

In addition, two other preliminary criteria were prominent in early search and selection procedures:

- Courseware should either lend itself to use within the generally accepted academic pattern of 15 units for a 3-credit-hour course, or be susceptible to modification or augmentation which would make this possible.
- Full term copyright protection will be required by SUN on all acquired materials, and all other rights and permissions will be requested on the same basis, subject to specific negotiations on a case-by-case basis.

These preliminary criteria sharply restricted the kinds and number of extant materials that were looked at in greater detail prior to 1974. In addition, the consulting firm looked primarily for possible courses in psychology, and thus did not presume to give UMA a comprehensive picture of what was available in general.

If a particular course survived the preliminary review by Robertson Associates, the course went through a series of additional review steps. Briefly, these steps included:

1. Receipt by SUN of informal written information about the course.
2. Analysis by SUN of information provided.
3. Preliminary viewing of one or two television units.
4. Comprehensive viewing of additional television units.
5. Evaluation of producer's general approach by a field evaluator.
6. Evaluation by SUN staff.

7. Content specialists' evaluation, with SUN staff.
8. Negotiation of possible terms of acquisition.
9. Final decision: go or no-go.

Using these general guidelines, possible course materials were reviewed and evaluated prior to 1974 at ten separate sites across the United States. Additional input was gained through consultation with program counselors of the Great Plains National Instructional Television Library, National Instructional Television, and the Public Television Library. Four courses were chosen for more exhaustive analysis and review by SUN staff and academic consultants. The course selected for adoption and adaptation was _Psychology Today: An Introductory Course_, developed by CRM Films, Inc. This course was selected because of the following clear advantages: it had 18 television programs, compared to as many as 30 or more in the other courses under serious consideration; it included an extensive study guide and textbook materials which might be used with minimal adaptation; it was readily available from the producing agency, at a cost within budget limitations; it had been used as a college credit course, and limited supportive data as to its usefulness and effectiveness were available.

Work on course acquisition done prior to 1974, then, resulted in the development of some general guidelines for finding and selection courses for acquisition, and in the selection of an introductory psychology course for UMA/SUN acquisition. The actual legal and financial agreements for acquiring this psychology course remained to be accomplished during 1974.

How adequate were these course acquisition procedures prior to 1974? In that the procedures eventuated in the identification and selection of a course subsequently used by UMA, they were adequate. From another perspective, though, the procedures needed considerable refinement. The criteria for course selection were at once very specific and restrictive (e.g., television materials "preferably on a 2" quad high-band tape."), yet somewhat vague with respect to content accuracy and level of interest. Other aspects of the process also needed examing.

Recognizing the need for more work in this area, UMA hired a course acquisition specialist early in 1974. The Office of Course Acquisition was given primary responsibility for identifying and overseeing evaluation of potential course acquisitions, and for negotiating and monitoring all course acquisition contracts. During 1974, this office developed a revised course acquisition procedure, and completed negotiations for the actual acquisition of the psychology course. The revised acquisition plan included attention to three kinds of activities: searching for possible materials; evaluating and selecting materials; and actually acquiring desired materials.

CURRENT ACQUISITION PLANS

Searching for Possibilities

Building on work already done by Robertson Associates, the Office of Course Acquisition during 1974 conducted an additional search for information about potential course materials that might be acquired for UMA offering. Sources consulted during 1974 include:

- SUN Inventory of Audio-Video Instructional Materials Available for Use in Higher Education
- Nebraska Educational Television Council for Higher Education Catalog of Instructional Materials
- Great Plains National Instructional Television Library Catalog of Instructional Materials

- *Purdue University Inventory of Undergraduate Credit Course Television Tapes
- *University of Wisconsin--Green Bay Index to College Television Courseware
- *Associated Western Universities, Inc. Catalog of Televised Higher Education courses in Science, Engineering and Business
- *National Information Center for Educational Media (NICEM) Indexes to Educational Media (Videotapes, Audio Tapes, Films, Slides, etc.)

Participating institutions of the UMA consortium have been surveyed as to courses that might be adopted and/or adapted. Specifically, these institutions have been asked to identify course materials germane to the priority course list adopted by the UMA Academic Council.

Commercial producers of instructional materials have been included in surveying potential acquired courses. Time-Life Media, Prentice-Hall, McGraw Hill, and Harper & Row are among those whose materials and information have been studies, along with Media Five offerings of in-service courses for teachers.

The Office of Course Acquisition has pursued numerous suggestions and information about potentially suitable college level courses. The telephone, and correspondence, form a major portion of this continuous investigation. Personal contact with institutional representative around the country (Green Bay, San Diego, Oregon, Florida, Kentucky, Ohio, Massachusetts, New York, St. Louis, San Francisco, Los Angeles, etc.) helps the flow of ideas, information, and projected developments in production of mediated higher education materials. The Director of Course Acquisition attended a September, 1974, meeting of representatives of the country's most active producers of higher education instructional materials, to exchange views and information on current and projected activities. Represented at that meeting were: Miami-Dade College; Dallas County Community College; Maryland Public Television; University of California at San Diego; University of Wisconsin--Green Bay; WNET, New York; and Great Plains National Instructional Television Library.

To date, initial review of more than a hundred courseware packages has been accomplished, and there are a half-dozen inquiries outstanding, awaiting reply to requests for information.

In addition, as priority course needs are satisfied, information about another 25-30 potential sources of course materials is at hand. These will be pursued as the subjects they treat come into correlation with later course priorities as defined by the UMA Academic Council.

The possibilities of adapting Open University foundations courses for UMA offering are currently in the proposal stage with representatives of the OU and the Exxon Education Foundation.

Another potential source of instructional courseware components for use by UMA stems from the cooperative working arrangement now in effect with Control Data Corporation, whereby consulting specialist(s) in computer assisted instruction and computer managed instruction are assisting UMA course developers in designing and/or identifying PLATO programs appropriate for use with UMA courses.

Evaluation Procedures

Once existing courses of tentative interest for UMA have been identified, they are subjected to a series of evaluations. The first step in this evaluation process consists of a preliminary report by a field evaluator.

For example, UMA might retain a consultant living near St. Louis to examine a course created by a college in St. Louis. This consultant would review the course, and submit a report according to the form in Figure 8.

Based in part on this field review, a preliminary examination of representative segments of potential acquired courses is made by UMA staff and selected field evaluators, based on an analytical scheme including content, appeal, appropriateness to target audience, and production and technical quality. The evaluation at this stage is guided by the form contained in Figure 9.

If the evaluation of the course is favorable, a final review panel is established to undertake a comprehensive examination of the course. Besides UMA staff, this review panel includes academic subject area faculty from institutions in UMA and throughout the country, as well as instructional design and media experts. Based on the aggregate data from all these reviews, a decision is made to go or not go with the course for UMA acquisition.

Evaluating potential courses for acquisition is made difficult because individual preferences enter heavily into judgments on most of the scales in the evaluation form. To date, no work has been done to determine the reliability of the forms. Because of the difficulties involved in getting precise measures of quality, more attention must be given to gathering judgments from many people. Through this kind of redundancy, it is hoped some general sense of the probable value of a given course can be ascertained. The attendant problem, of course, is that a requirement of consensus may tend to influence selection decisions toward courses which, in their

UMA EVALUATION REPORT

Part 1

Subject area____________________ Institution__________________________

Title of course____

Stated objectives____

____

____

Key instructor_____________________________ No. units ________________

Credentials________________________________ Length ____________ mins.

_____________________________________ Medium____________________

_____________________________________ Seq___ ____ Mod__________

Television's function____

____

Recommended text____

Potential Utility: _____ Personal Enrichment _____ Academic Achievement _____ Professional Education

Is material testable?____

Data on student achievement____

____

____

____

Persons contacted____

____

Associated materials:

Study guide_____ Videocassettes_____ Audio_____ Self-test_____

Other____

Figure 8. Field evaluator report form: potential UMA acquisition

Title of course____

Units viewed____

Recommendation: Approve ____ Marginal ____ Hold ____ Re-judge ____ No interest ____
(Detail below)

Explanatory comments____________________________________

Detailed ratings: (High) (Low)

SUBJECT MATTER.................. 1 2 3 4 5 6 7
Interest, accuracy, relevance, pacing, level, organization

INSTRUCTIONAL PRESENTATION.... 1 2 3 4 5 6 7
Degree of communication, use of medium, student participation

PRODUCTION QUALITY............ 1 2 3 4 5 6 7
Technical, directing, staging, actors, inserts, editing

ESTIMATE OF OVERALL EFFECTIVENESS 1 2 3 4 5 6 7

Additional comments_____________________________________

Date of viewing________________ Evaluator______________________

Figure 8. (Continued)

UMA PROGRAM EVALUATION FORM

Series Title_____________________________________ Date______________

Lesson Title____

Directions: Circle number on given continuum to show your evaluation of each factor.

SUBJECT MATTER

My interest in subject matter	1	2	3	4	5	6	7
	High						Low
Accuracy of content	[illegible]	2	3	4	5	6	7
	Accurate						Inaccurate
Relevance of content	1	2	3	4	5	6	7
	Pertinent						Irrelevant
Quantity of material covered	1	2	3	4	5	6	7
	Correct amount for proper retention						Too much (little) for proper retention
Pacing	1	2	3	4	5	6	7
	About right						Too fast (or slow)
Level of material and vocabulary	1	2	3	4	5	6	7
	About right						Above (below) intended level
Organization and planning	1	2	3	4	5	6	7
	Well planned						Disorganized
Usefulness	1	2	3	4	5	6	7
	Very useful						Not useful

Comments:

Figure 9. Review panel evaluation form: possible UMA acquisition.

INSTRUCTIONAL PRESENTATION

Effectiveness of opening	1 2 3 4 5 6 7	Captures attention	Creates antagonism
Teaching technique	1 2 3 4 5 6 7	Effective use of TV	Ineffective use of TV
Presenter's poise and competence	1 2 3 4 5 6 7	In command	Ill at ease
Likely level of student participation	1 2 3 4 5 6 7	Active	Passive
Ability to motivate student	1 2 3 4 5 6 7	Strong	Weak
Closing summary	1 2 3 4 5 6 7	Generates interest in next lesson	Loses interest

Comments:

Figure 9. (Continued)

PRODUCTION QUALITY

Effectiveness of background and set	Effective	1	2	3	4	5	6	7	Distracting
Effectiveness of visuals and props	Effective	1	2	3	4	5	6	7	Ineffective
Camera technique (Directing)	Skillful	1	2	3	4	5	6	7	Clumsy
Lighting	Effective	1	2	3	4	5	6	7	Ineffective
Audio	Clear	1	2	3	4	5	6	7	Muddy
Film segments	Effective	1	2	3	4	5	6	7	Ineffective
Animation	Effective	1	2	3	4	5	6	7	Ineffective
Actors/actresses	Effective	1	2	3	4	5	6	7	Ineffective
Writing	Genuine	1	2	3	4	5	6	7	Stilted
Editing	Skillful	1	2	3	4	5	6	7	Inept
Format in general	Helped to attain objective	1	2	3	4	5	6	7	Not useful in attaining objective

Comments:

Figure 9. (Continued)

SUMMARY

Subject matter
1 2 3 4 5 6 7
Excellent Very poor

Instructional presentation
1 2 3 4 5 6 7
Excellent Very poor

Production quality
1 2 3 4 5 6 7
Excellent Very poor

Estimate of likely overall effectiveness for intended student
1 2 3 4 5 6 7
Effective Ineffective

On the basis of this viewing and examination of associated materials, my recommendation for adaptation as courseware for UMA:

Yes ______

No ______

Comments:

Name of evaluator____________________

Date of viewing____________________

Figure 9. (Continued)

blandness, offend no one. It will be hard to find courses that simultaneously satisfy content experts, instructional designers, producers, and learners. This presents an important inquiry item for 1975.

Acquisition

Once a course has been evaluated positively, steps must be taken by UMA to actually acquire the course for use in the UMA region. Experience to date suggests that producers of courses which UMA wants to obtain have a variety of constraints, conditions of use, and terms of sale. Acquisition procedures vary from producer to producer, and sometimes even from course to course by the same producer. Bases for these variations stem from such factors as: whether the producing agency developed the course with the initial intent of offering it for other users; how much of the development cost the producer wants to recover; which geographical areas the producer want to reserve; what lease pricing policy the producer has devised (base fee plus per enrollment fee, or variations thereof). All these factors have implications for course acquisition.

Lease pricing policies generally follow the base fee plus per enrollment fee formula, i.e., the producer requests a base payment for use of the materials, plus a charge for each student enrolled. This charge may vary from $1.50 per student, to 50% of tuition.

These variables present difficulties when attempts are made to construct fixed budget categories for course acquisition. This becomes especially apparent when student costs are included as part of the total acquisition outlay, simply because UMA is then forced to estimate enrollment (or at least project minimum enrollment levels) in determining the acquisition cost for a given course.

Limited distribution restrictions also impinge on acquisition cost estimates from the standpoint of attempting to develop a cost-income ratio for obtaining and offering a course. The narrower the distribution potential, the lower the income (cost offset) potential. The relatively intangible factors of quality and variety that a given course would bring to UMA's curriculum could provide impetus or justification on some occasions for incurring a deficit in acquisition of a course, but such consideration should be followed only after exhaustive investigation of alternative courses and of the priority of need in a particular subject area.

When considering the acquisition of courses, it is necessary to take into account a multiplicity of constraints, as indicated above. More specifically, the culmination of acquisition can be seriously impeded, if not complete thwarted, by these constraints. At the very least, dealing with such considerations as the following is a time-consuming process:

1. Budget allocation. Some courses simply cost too much to permit acquisition by UMA, and still maintain a cost-effective ratio in keeping with sound fiscal management.

2. Modification. If the course is not usable intact, as is, but the review panel finds it acceptable on condition of modification (added components, revision of present elements), will the producer agree to such modification, and to what extent?

3. Copyright. Producer must indemnify UMA against any action for copyright or patent infringement, invasion of the rights of others, or any other action arising out of UMA's use of the course.

4. Duplication and distribution. Because of the multi-media approach to delivery, which may involve broadcast, closed circuit, audio-visual use, duplication or modification of video, print, audio, or other components, it is imperative that UMA be permitted to duplicate some or all of the course

> elements. Similarly, UMA must have permission to distribute course materials in keeping with the varied aspects of statewide delivery systems. UMA also seeks to obtain rights to distribute a given course or courses outside the immediate consortium membership.

Courses investigated and sought for acquisition by UMA thus have to satisfy stringent criteria throughout the identification/evaluation/acquisition process. Of the more than 100 courses initially reviewed to date, one is presently being offered, and two others will become active UMA offerings. Six more are under preliminary examination by field evaluators: History of Western Civilization; Conversations in American Government, two possibilities from the Courses By Newspaper project, Music Appreciation, and The American Revolution. As indicated above, another half-dozen courses will be submitted for field evaluation upon receipt of requested preview materials.

Reasons for courses not being accepted by UMA, or becoming unavailable to UMA, relate directly to the constraints cited above. One can easily imagine that, given the amount of media-based course production occurring at institutions throughout the country, there would be many materials from which to choose. But when high standards of content treatment, production, and technical quality are applied, and when potential acquisitions come under closer scrutiny for instructional effectiveness, such, unfortunately, is not the case.

Because of the above requirements, and strict quality control criteria, there appear at this time to be a minimal amount of usable open learning college level course materials suitable for UMA acquisition.

ADAPTATION

Some of the courses UMA decides to acquire in the future will need to be adapted in some way to fit the particular needs of UMA's development commitments and delivery constraints. This work assignment called for developing a plan for adapting courses. In general, course adaptation might include one or more of the following: revision of or additions to television segments, study guide contents, audio component, text; the addition of components such as newspaper modules; and conceivably even restructuring course content itself. Beyond these very general kinds of alterations, it is difficult to be precise about adaptation in the abstract. Adaptation procedures will vary as a function of the specific course being adapted, and the people doing the adapting.

What happened during 1974 was less an attempt at model building or planning than a hands-on attempt to actually adapt the psychology course. What is reported herein is thus descriptive of the major aspects of an adaptation experience. There has been no written analysis of that experience, nor any attempt to generalize to a prescriptive plan for adaptation. Such thinking must occur as more experience is gained. Perhaps general plans will never be appropriate. For purposes of this document, then the following is a review of procedures used in adapting the required course in psychology.

Dr. David Levine, chairman of the Psychology department at the University of Nebraska-Lincoln, agreed to serve as resident content specialist from June 1 through August 1, 1974, to assist in organizing and structuring course content. Prior commitment to a year's study in Great Britain prevented Dr. Levine's continuation with the psychology course development. His replacement was Dr. John L. Flanagan, Jr., of the University of Missouri, who continued development and supervision of course content. Executive producer for the course was SUN Production Services Coordinator James Craig, and the instructional designer was Ken Warren, SUN's Course Acquisition Specialist.

The Senior Content Advisory Panel, all members of psychology departments at their respective institutions, were:

Dr. Nancy W. Denney
University of Kansas

Dr. Thomas Hannum
Iowa State University

Dr. James McConnell
University of Michigan

Dr. Fred McKinney
University of Missouri

Dr. James Thomas
University of Nebraska-Omaha

Each member of the Senior Content Advisory Panel was directly involved with introductory psychology courses, and two of the panel members, Dr. McConnell and Dr. Thomas, had direct experience in using the Psychology Today text and associated materials in their classes.

This panel reviewed the materials acquired from CRM and with the resident content consultant, Dr. Levine, determined what alterations in the psychology course should be made. Members of the course team were assigned to seek out additional materials in areas not covered by the television portion of the course.

Meanwhile, the existing CRM films were evaluated for content, and applicable films were selected for use by UMA. These films were analyzed for their content, and supplementary materials were prepared by the course team to prepare the films for use by off-campus students. In the preparations of these new materials, the techniques used in the original films were studied, and a formula was devised to create variety in techniques within the films. The UMA-produced segments were primarily attention-getting segments at the beginning of programs, introductions to CRM-produced and other materials, and reviews of materials covered in a particular program.

Other television materials incorporated in the television component to supplement the CRM films were acquired from the University of Pennsylvania, WNET-TV in New York, and the University of Nebraska.

Since the print materials in the CRM package were prepared primarily for on-campus use, some adaptation was necessary to make them suitable for SUN's target audience. The text supplied by CRM was used intact, but assigned readings were altered according to the Senior Content Advisory Panel's outline of the course. The study guide was thoroughly revised for off-campus use; new material was added by the SUN course team to the material in the CRM guide. In addition, SUN added a newspaper component to the course, to highlight through contemporary examples the concepts treated in each week's course unit.

This, then, represents one attempt at adaptation. Other attempts may differ in procedures and outcomes. The utility of the psychology adaptation effort will become apparent during field testing of the course.

SUMMARY

Experience gained during 1974 with the acquisition and adaptation of the psychology course has been used in the formulation of a set of procedures for location, evaluation and acquisition of acquirable materials, and an approach to considering the adaptation needs of acquirable courses. These procedures will continue to be refined in practice as acquisition and adaptation experience is gained, throughout the five-year developmental period.

CHAPTER VIII
DELIVERY RESOURCES IN UMA STATES

WORK ASSIGNMENT #8

> Prepare and diagram five-year projections of (a) broadcast television delivery within the region, including potential hours of channel time availability, and (b) other open learning delivery mechanisms.

In order for the UMA states to meet the broad goal of serving a new clientele of adult learners in a cost effective manner, each of those states will need to capitalize as much as possible on resources already existing in the states. Similarly, if UMA, as the regional entity, is most effectively to coordinate delivery systems across states, and to take delivery constraints into account while developing courses, the extent of state resources must be known.

This work assignment calls for a cataloguing of broadcast and other open learning delivery mechanisms existing or planned to exist, in the several UMA states. To accomplish this task, UMA asked representatives from the UMA states to prepare inventories of resources in their states, which UMA staff then summarized.

This chapter reports the results of these investigations. The chapter is divided into three sections. The first section summarizes major outcomes resulting from work on this assignment. The second section details a summary of regional resources potentially available for delivery of UMA courseware. The final section includes more detailed information concerning delivery potentials for each state.

The existence of certain kinds of resources does not imply that all those resources will necessarily be used or available for use as needed.

Nonetheless, the information reported herein is important as baseline data for decisions about the feasibility of the idea of an open learning program for the region. To be successful, such a program must have high quality programs and materials, a group of people interested in what is offered, and adequate means of getting the material to the people.

The inventory of delivery system resources in the five states described here suggests the feasibility of the delivery of mediated open learning courseware to a majority of the people in the UMA region. Most of the necessary delivery system resources already exist in each of the states in the region. While a great deal of effort will be required to fully develop postsecondary open learning systems in each state, the inventory suggests that Nebraska, Missouri, Kansas, and Iowa already have most of the important pieces of their open learning systems in operation. The logical next step in delivery system development is to develop statewide delivery plans which capitalize on existing resources.

SUMMARY OF MAJOR OUTCOMES

- An inventory of regional resources for delivery of UMA courseware was developed.
- Individual reports of possible resources were developed by each state.

INVENTORY OF REGIONAL RESOURCES

Table 19 summarizes existing television, radio, and newspaper stations and systems in the four UMA states. The 72 commercial television stations virtually blanket the states (see Figure 10), as do newspapers. The most complete broadcast coverage of the UMA region, however, is provided by the AM and FM commercial and public radio stations.

Table 18. Inventory of existing television, radio, and newspaper stations/systems in UMA states.

Resource	Nebraska	Missouri	Kansas	Iowa	Total
Public Television Stations	9	3 (plus KOMU-TV)	2	2 (Plus WOI-TV)	18
Commercial Television Stations	13	23	12	14	62
Cable Television Systems	43	87	60	34	224
State Public Television Networks	(Active)	(Planning)	(Planning)	(Active)	
Commercial	43	165	96	82	386
Public Radio	5	17	11	17	50
Newspapers					
Daily	20	50	51	41	162
Weekly	213	286	254	250	1,103

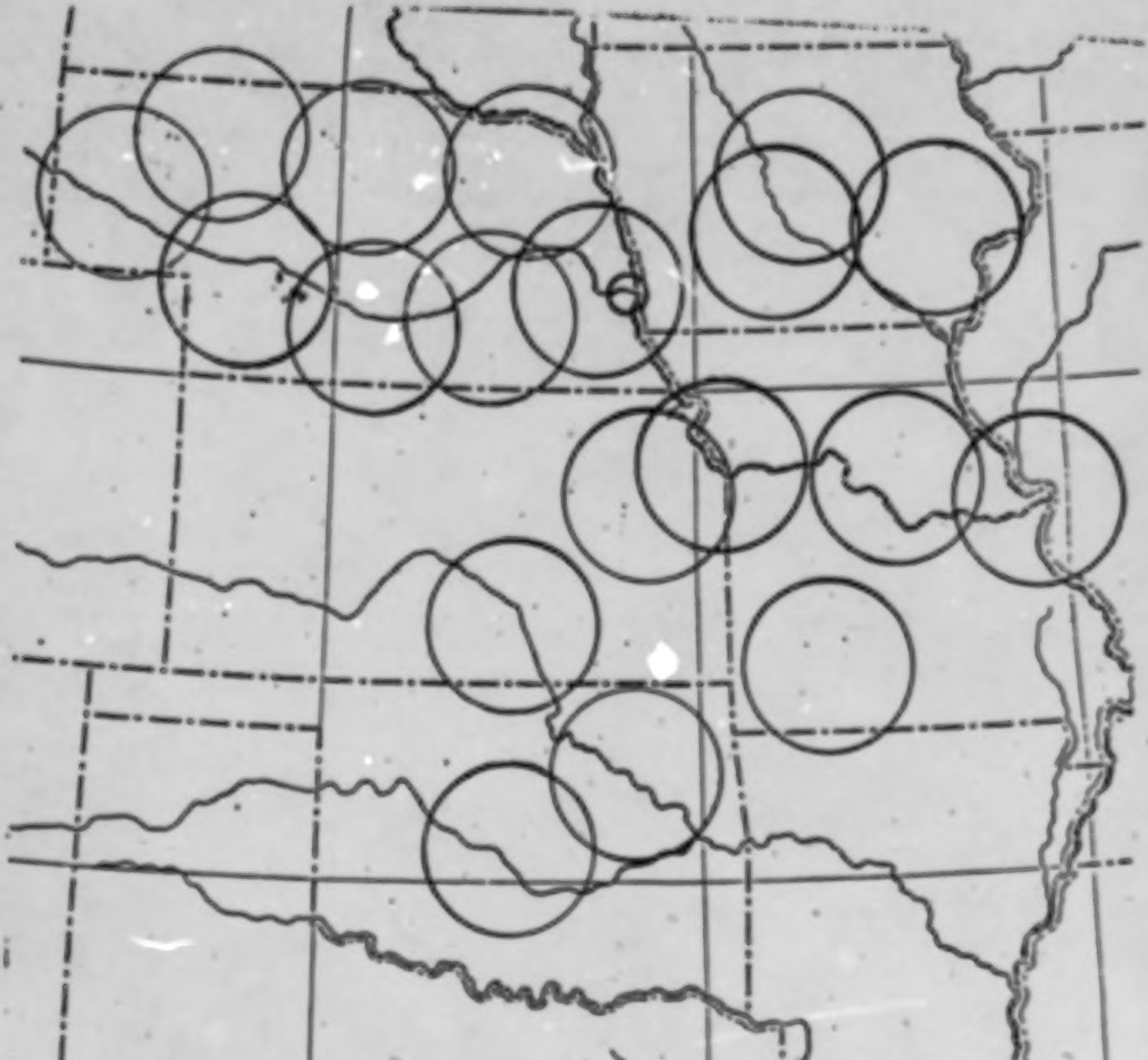


Figure 10. Public television coverage in the UMA region.

Public television is one of the resources most often associated with open learning programs such as UMA. The 18 public television stations in the UMA region reach 70% to 80% of the four-state population of more than 9 million people. At present, the approximate total population served by existing public television stations is 7,500,000 people. The completion of planned statewide networks in Missouri, Kansas and Iowa would bring public television to nearly 100% of the population in the UMA region.

All four states, of course, have mail and United Parcel Services. In addition, all member institutions in UMA have extensive computer capabilities. There are other kinds of resources as well, including the following:

Learning and Extension Centers

Nebraska's four SUN learning centers will provide valuable experience for the development of learning centers throughout the UMA region. In the other three states, county and area extension centers may become learning centers for UMA courses. Missouri has 115 county centers and 22 area centers, Iowa has 99 county centers and 12 area centers, and Kansas has 103 county offices and five field offices.

Telephone

Nebraska uses a statewide WATS system which provides two-way communication between students, learning centers and the SUN central office in Lincoln, and has out-of-state WATS capability one-way.

Missouri also uses a statewide WATS and an out-of-state WATS system. The four campuses of the University of Missouri are interconnected by a WATS system, as are its four FM stations. A sophisticated dial-up amplified telephone system permits up to 22 points to be interconnected. The special automatic bridging equipment and signalling system equipment were specifically designed and built for the University of Missouri by General Telephone. The 16 Missouri and Kansas postsecondary institutions of the Kansas City Regional Council for Higher Education operate a telephone network.

In Kansas, the Continuing Education Network links all six Regent Campuses and 18 other locations by means of a dedicated-line telephone system.

SCA

In Missouri, a SCA (FM sideband channel) network delivers an instructional and informational service to the state. This network and the Educational Telephone Service are frequently linked together to deliver a special program.

The University of Kansas provides an Audio-Reader Service to the blind and physically handicapped through the SCA channel of KANU-FM.

Extension Correspondence Programs

Each state offers correspondence programs through at least one of its state university campuses. Nebraska has the largest correspondence program in the world, and many of the different state programs make use of audiocassettes, filmstrips and other media, as well as print.

Film and Videotape Libraries

All UMA universities own and operate film libraries. The world's largest ITV library, Great Plains National, located at the University of Nebraska-Lincoln, has agreed to handle the packaging and distribution of all UMA course materials. In Iowa and Missouri, cooperative purchase arrangements have been developed among the various campuses.

Production Centers

All UMA universities and their campuses have multimedia production centers. These centers' media capabilities include television, radio/audio, film and photo, graphics and print. The Nebraska Educational Telecommunications Center, one of the nation's largest and most sophisticated educational production centers, will serve as the main production facility for the majority of UMA courses.

Open Learning System Plans and Programs

SUN, the University of Nebraska's statewide open learning program, is one of the nation's most fully developed open learning systems.

The University of Missouri-Columbia's Nontraditional Study Program is the nation's first such College of Agriculture-based program. The University of Missouri Task Force on the Open University completed its report and suggested plans for the four campuses in March 1974. In Iowa, an extensive open learning program, the Iowa Commonwealth College, is under study. It would involve the state universities, private colleges and community colleges. The possibility of coordinating UMA delivery plans with such planned and existing programs is under investigation.

State Media Associations

All UMA universities have excellent relationships with such groups as state press associations, state associations of broadcasters, state associations of public broadcasters, state associations of librarians, state audio-visual associations, and state cable television associations. These contacts will be invaluable in promoting and supporting UMA courses.

Satellite Development

Officials from the ATS-3 Satellite program which serves the Rocky Mountain and Appalachian Satellite Projects have contacted the University of Nebraska's SUN Program and the Great Plains National ITV Library regarding programming.

Washington University in St. Louis is conducting research for NASA to examine the potential and problems associated with the use of communications satellites for facilitating education in the U. S. The University of Missouri-Columbia is developing an India Satellite Project which would seek to cooperatively produce instructional materials for use in Indian villages.

The University of Kansas library is one of four major participants in a project to test the feasibility of using a satellite as an extension of local library resources. Kansas State University is participating in the ERTS Program, as is the University of Nebraska.

State Telecommunication Agencies

Nebraska, Kansas, and Iowa have state telecommunication agencies.

I.T.F.S.

At the present time, only the University of Missouri-Columbia is making use of the 2500 mh^2, Instructional Television Fixed Service.

STATE-BY-STATE INVENTORIES

Each UMA state was asked to prepare a summary of delivery system resources potentially available in that state. In addition, each report was to contain a section on how those resources might actually be used in an open learning program. The following pages contain the reports from each state, as they were submitted to UMA.

A Summary of
Delivery System Resources
in Iowa

Television

Iowa has two public and 14 commercial television stations. The two public stations are operated by the Iowa Educational Broadcasting Network. One of the commercial stations (WOI-TV) is operated by Iowa State University.

Radio

There are 97 radio stations (AM-FM combinations are counted as one). Of these, 13 are public in the sense that they are operated by schools and colleges, but several are limited operations reaching only campus audiences. Iowa State University's WOI-AM serves the entire state.

Cable TV Systems

(We are unable to provide an accurate statement on cable TV in Iowa for lack of response to our inquiries. It is a rather spotty development in this state.)

Newspapers

There are 41 daily newspapers and approximately 330 weekly newspapers in Iowa.

Mail and United Parcel

Postal Service and United Parcel Service are available throughout the state.

Computers

Computer systems of Iowa State University, the University of Iowa and the University of Northern Iowa are interconnected so that programs may be interchanged among them. Now under discussion is a statewide system which will link high schools, junior colleges and colleges.

Extension Centers

Iowa State University's Extension Service maintains 99 county offices and 12 area offices. These offices assist in off-campus courses and would appear to have the potential for service as learning centers.

Film and Videotape Libraries

Iowa State University and the University of Iowa maintain the major film libraries in the state. They employ a common catalog and common price schedule and serve institutions in surrounding states as well as Iowa. Approximately half of the colleges in the state are represented on the Iowa Higher Education Association Instructional Resources Council which participates in selecting films and obtaining grants for the two libraries.

Production Centers

Iowa State University's radio, television, extension and media resources operations are engaged in production and distribution of educational programs. The Iowa Educational Broadcasting Network has production capabilities which could be of value to UMA if IEBN should ever become associated with UMA courses.

Open Learning Systems Plans and Programs

Now under study is an open learning program called Iowa Commonwealth College in which the state universities, private colleges and community colleges would cooperate. There would be no residency requirements and degrees would be granted by Iowa Commonwealth for credit courses completed in any accredited Iowa Institution.

State Media Associations

Such organizations as the Iowa Press Association and Iowa Broadcasters Association have the potential to encourage the cooperation of publishers and broadcasters.

Potential Delivery System Resources in Iowa

Introduction

Elements of the multi-media system necessary to University of Mid-America programming already exist in Iowa and planning in a number of communications areas holds promise of further developing resources which would be employed in open learning presentations.

Much of the capability exists at Iowa State University. The capability is enlarged by the Universit-'s cooperative relationships with the other two state universities and with other educational institutions and organizations. Several proposed developments appear to dovetail nicely with UMA objectives. Following is a description of some of those potential resources.

Off-Campus Instruction

Iowa State University's Extension Service has experience of long standing in the presentation of off-campus courses throughout the state.

Some of these courses utilize videotaped presentations prepared by Iowa State personnel and distributed to outstate classrooms. The Extension Service's network of 99 county and 12 area offices functions in the promotion of off-campus instructional opportunities, enrollment in courses and distribution of materials. They form a logical starting point for the establishment of learning centers.

Radio and Television

Iowa State University operates WOI-TV, a commercial station affiliated with the ABC network, and WOI-AM&FM, a non-commercial station. The television station has experience in the presentation of open-channel instruction to Iowa audiences beyond the campus and closed-circuit instruction to classrooms on the Iowa State campus. Besides reaching a statewide audience, the radio station regularly distributes lectures, concerts and other programs to stations across the state.

The Extension Service's information office utilizes the production facilities of WOI radio and television to provide programs to outstate stations. It is developing a videocassette library, and the 12 area extension offices are equipped with playback units and color monitors.

Iowa State's Film Production Unit has won numerous awards for its work and represents still another high-quality resource.

Cooperative Undertakings

In several areas, Iowa State University is engaged in cooperative programs and planning for new programs which have implications for an open learning system.

The Media Resources Center cooperates with the University of Iowa in the distribution of films and, in effect, they constitute one library with two repositories.

The Computation Center cooperates with the University of Iowa and the University of Northern Iowa in the interchange of programs, and the Center is entering into discussions with state offices, the Department of Public Instruction, and other educational institutions on the feasibility of a statewide computer network which would serve instructional purposes.

The University is participating in discussions of the feasibility of establishing Iowa Commonwealth College as a means of providing degree opportunities without residence requirements. The plan envisions persons around the state completing course work at accredited institutions and applying these credits toward a degree from Iowa Commonwealth College.

Allied Opportunities

The Iowa Educational Broadcasting Network presently consists of two stations--KDIN in Des Moines and KIIN in Iowa City. This limited area of service is expanded by the cable television systems now in operation. However, IEBN expects within two years to have eight transmitter channels and three lowpowered translators which will make its programs accessible to all the state's residents. The network also hopes to have a new production facility in approximately five years. The interrelationship of the State Educational Radio and Television Facility Board, which administers IEBN, and the State Board of Regents, which administers Iowa's public universities, would seem to recommend that some consideration be given to seeking IEBN's participation in UMA programs.

Iowa's commercial broadcasting operations are supportive of higher education, but it is questionable how much, if any, participation might be expected from them. However, they well might promote the open learning concept through their public service announcements.

Iowa's newspapers also are receptive to educational endeavors and it seems quite probable that they would make a significant contribution through promotion of programs and distribution of study materials.

Cable television is an uncertain element at this time, but it would appear that more residents of the state will be served by it in the coming years and, therefore, it might play some role in open learning delivery.

A Summary of
Open Learning Delivery Resources
in Kansas

The following summary indicates the existing resources in Kansas that might be utilized in an open learning delivery system.

Public Television

Kansas has two public television stations. One is located in Topeka, the other in Wichita. A public television station in Kansas City, Missouri, (channel 19) covers much of eastern Kansas and might be utilized.

Commercial Television

Kansas has 13 commercial television stations, providing virtual blanket coverage of the state. In addition, three VHF stations and one UHF station located in Kansas City, Missouri, cover much of eastern Kansas. Wichita television stations have affiliates as well as several translator stations throughout the state.

State Educational Television

In 1974, the Kansas Legislature created a Public Television Commission to study the feasibility of creating a statewide public television system. The commission is to report on its progress to the governor and legislature at the beginning of the 1975 legislative session.

CATV

There are 60 community antenna systems in Kansas.

Commerical Radio

There are 61 commercial AM stations and 36 commercial FM stations located in towns and cities in every area of the state.

Public Radio

There are ten public radio stations in Kansas. All are owned by community colleges, junior colleges, or the six Regents institutions. The University of Kansas operates KANU-FM, a full-time stations, and KFKU, an AM station that shares time with a Topeka radio station. Kansas State University operates KSAC on AM. It shares time with WIBW radio in Topeka.

Tape Networks

Both Kansas State University and the University of Kansas operate tape networks providing Kansas radio stations with tape recorded radio programs. It is possible that these networks could be utilized for open learning. The state Radio Network distributes more than 25,000 tapes each year to the commercial stations of Kansas and surrounding states.

Newspapers

Kansas has 51 dailies and 254 weekly newspapers.

Mail and United Parcel

Mail blankets the state of Kansas while United Parcel covers most of the state's 105 counties.

Computer

The University of Kansas and Kansas State University have sophisticated computer systems. A study on updating these systems is currently underway.

Statewide Continuing Education Network

The Statewide Network is a system whereby classroom instruction is conducted in a linkage of statewide locations. Through a voice amplification system, live and instantaneous communication is possible 24 hours a day.

Each location is staffed for enrollment activities, class sessions, examinations and the necessary operations designated by the type of program conducted. This telenet service now has drops in 24 Kansas communities. It consists of a telephone system linking all six Regents' Campuses and 18 other locations. The Network is funded by the Continuing Education Divisions of the six Regents' Campuses.

Library for Continuing Education

The Library for Continuing Education located at the University of Kansas is oriented to serve off-campus clientele. It can provide loans of resource and reference materials and bibliographies to off-campus instructors at no charge.

Intercampus Television Instruction

Operation of the Lawrence terminal of the microwave link to the Kansas City campus of the University of Kansas is presently being used for two-way classroom interaction. It could be utilized in open learning.

Audio-Reader Service

Utilizing the sub carrier of the University of Kansas FM radio station's transmitter, KANU-FM broadcasts daily to blind and physically handicapped listeners within a radius of 100 to 150 miles of Lawrence. Special receivers are needed to receive the service. This facility could be utilized for special purposes in an open learning delivery system.

Statewide FM Radio Network

The University of Kansas is presently examining the possibility of establishing satellite radio stations for KANU-FM throughout central and western Kansas. If such a network of stations becomes a reality, the network could be utilized for open learning.

Extension Correspondence Programs

The state correspondence program center located at the University of Kansas provides a large correspondence program.

Film Libraries

Continuing Education at the University of Kansas maintains a large film library containing more than 6,000 films. Kansas State University has a film library on selected subjects, primarily in agriculture and home economics.

State Media Associations

Many state media associations support the excellence of education found in the institutions of higher learning throughout the state. They indicate a willingness to cooperate in open learning. Among them are the Kansas Association of Broadcasters, the Kansas Press Association, the Kansas CATV Association and others.

Satellite Development

The University of Kansas and Kansas State University are carefully watching the development of satellite communcation as a potential means of delivery in open learning. At present, the University of Kansas is involved, as one of four major library participants, in a project to test the feasibility of using a satellite as an extension of local library resources for residents of 12 Rocky Mountain and plains states. Kansas State University is currently participating in the ERTS program.

Audio-Visual Center

The Audio-Visual Center at the University of Kansas provides such materials as films, filmstrips, audio tapes, records, slides and transparencies; assistance in securing audio-visual materials not owned by the Center; training in the operation of audio-visual equipment including 16mm and 8mm projectors, slide and filmstrip projectors, tape recorders, record players, television recorders and cameras; assistance in developing effective practices in the utilization of audio-visual materials and equipment; assistance in the design and production of audio-visual materials that could be used in open learning.

Complete Motion Picture Services

Specialists in the Extension Motion Picture Unit of the Office of Extension Radio-TV Film offer complete motion picture service to any Extension, university, or community group which may have the need and funds for utilizing film as a means of presenting or expanding an Extension-related educational message. Services offered include initial consultation with the client to determine the appropriateness of the message to the film format, scripting, client liaison, selecting of narrator, talent or technical advisors, film direction, studio or location shooting, animation services, optical effects, sound recording, film editing, titles, selection of music, close supervision of all lab services and the final preparation of the finished film for release printing and duplication. The motion picture unit is service clearing (self-supporting), and charges are made for most services.

Cooperative Extension

Through the Cooperative Extension Service, Kansas State University has offices in all counties of Kansas providing non-credit educational programs from the university in agriculture, home economics and 4-H. There are supported by five area offices. Each office is equipped with a videocassette player and a library for area use.

Video Cassette Production

Kansas State University through its office of Extension Radio-TV-Film has received several grants to study videocassette production and applications.

A Summary of
Open Learning Delivery Resources
in Missouri

The following summary indicates resources in Missouri that might be utilized in an open learning delivery system.

Public Television

Missouri has four public television stations. These stations have the capability to reach almost 100% of the population of the state. Within the last week conversations have been held with each of these stations relative to their interest and willingness to participate in making college-level courses available to people in their homes throughout the state. At KCPT Channel 19, Kansas City, Mr. David C. Welch, Program Director, was enthusiastic about participating in this project. Mr. Robert C. Glemier, Executive Director and General Manager of KETC, Channel 9, St. Louis, indicated that he would be willing to give prime time for airing these materials. He also indicated that his station was involved with other cable television franchises extending to many parts of the state, particularly in the southwestern portion of the state (including Joplin), and would be willing for these stations to participate. In Springfield, Missouri, Channel 21 is scheduled to go on the air in the fall. Mr. Bill Maynard, General Manager, indicated he would be very willing to cooperate in the project. He indicated that there were other educational institutions in that area that would be willing to cooperate. The University of Missouri Educational Television Station, Channel 8, KOMU, is managed by Mr. Tom Gray. Mr. Gray indicated hearty willingness to cooperate in this project.

Commercial Television

There are 23 commercial television stations in Missouri, providing blanket coverage of the entire state. While formal discussion with the stations about participating in the UMA Project has not occurred, informal conversations have revealed a considerable amount of interest in this project.

CATV

A recent survey conducted with cable television systems in this state relative to public service programs supplied by the University of Missouri has revealed a considerable interest in this type of program. It is safe to assume that the community systems in Missouri would be responsive to our requests.

Commercial/Public Radio Stations

The Missouri Public Radio Association is extremely active. The group recently banded together and requested that the University of Missouri coordinate a project to share programs on a weekly basis. This project is working extremely well and the managers of all these stations would stand ready to cooperate by airing programs that would involve UMA.

The University of Missouri has developed an FM Radio Network that encompasses about 95% of the state. The SCA Network has become a reality in fiscal year 1974. Approximately $25,000 has been spent within the last year to locate receivers and antenna equipment throughout the state. A proposal has been developed to expand this SCA Network. Approximately $15,000 has already been allocated for procurement of additional receivers and antennas and another $25,000 is being requested to further implement this state network.

Newspapers

A list of the newspapers that might be considered for participation in the state of Missouri has been compiled and forwarded to UMA planners.

Mail and United Parcel

The state is blanketed by postal and United Parcel Service. Within the University of Missouri, courier service delivers mail between all campuses once each day. Through this service, it is possible for any materials to be placed in the mail by 5:00 o'clock the next morning.

Telephone

All campuses of the University of Missouri are connected by the WATS system. In addition, the State Communications Network is used to interconnect the various radio stations of the University of Missouri to provide simultaneous programming. An amplified telephone service functions within the University of Missouri and various Extension Centers located throughout the state. The system is bridged from a central location on the Columbia campus. The conference bridge automatically adjusts the levels of the incoming telephone signals so that they are all kept at the same volume level. Potential educational and administrative application of the amplified telephone service is extended. A lecturer or administrator can talk to and be questioned by groups of people in the various area extension centers throughout the state of Missouri. In addition, direct conferences may occur between extension centers. This system is an economical and effective means of bringing people together for an exchange of ideas and information. The system covers almost every point in the state of Missouri. A recent survey of individuals participating in a project involving amplified telephone and the

SCA-FM Radio revealed that 73% of those participating in the project felt it to be very worthwhile and wanted the project continued and expanded.

Extension Correspondence Programs

For many years the University of Missouri has maintained an extensive offering of courses to students through correspondence. The Center for Independent Study through Correspondence has administrative responsibility for coordination of all correspondence instruction offered by each of the four University of Missouri campuses. This includes an extensive offering of both university and secondary school level courses.

Film and Video Tape Libraries

A centralized film library is located at Columbia. An extensive offering for films may be obtained by any group or institution in the state of Missouri. These films are rented to various groups. Recently the four campuses of the University of Missouri have agreed to cooperatively purchase some of the more expensive film series that have been produced by the Time-Life Corporation. As a result of extra funds being allocated for films, the campuses are participating in the selection of a variety of additional films. This project is working in a very satisfactory and cooperative manner. A video tape library has recently been developed.

Production Centers

There are production centers on the four campuses for producing both audio and video material. The most extensive center is the Academic Support Center located on the Columbia campus, a centralized facility serving the entire campus and servicing equipment for the other campuses on a cost basis. This center has color production capabilities. There is also a media center at the Medical School. At the Rolla campus, a small but efficient production center has been developed, and color capabilities are being added. At Kansas City, sophisticated equipment for producing color two inch material is available at the Dental School. At the School of Education UMKC, black and white production facilities are available. Within the next six months, color facilities will be available for production at the University of Missouri at St. Louis.

Open Learning System Plans and Programs

An open learning project funded by the Kellogg Foundation will be operative in the 1974-75 academic year in the College of Agriculture at Columbia. There has recently been developed by a University-Wide Task Force a plan for an open university for the entire University of Missouri. An important survey of the need for a higher education open learning system in St. Louis was conducted by Dr. Walter E. Hunter for the Junior College District of St. Louis, St. Louis County, with support from the Fund for the Improvement of Postsecondary Education.

Extension Centers--Learning Centers

There is an extension center located in each county in the state of Missouri; however, there have been designated 22 area extension centers. Each of these centers has been supplied a Sony Video Cassette receiver. Considerable use is currently being made of material that has been recorded on the various campuses for use with the field staff. These extension centers would be very happy to cooperate in dispersing other materials to clientele within their areas.

Media Associations

The University of Missouri and its four campuses have enjoyed a good working relationship with the Missouri Press Association, the Missouri Broadcasters Association, the Association of Public Broadcast Stations and the Missouri CATV Association. It is reasonable to assume that these Associations would be delighted to explore with the University of Missouri ways of facilitating the use of UMA materials in the state of Missouri.

Satellite Development in Missouri

The University of Missouri-Columbia is developing a project which would entail a relationship with a host university in India and possibly a host university in Brasil (possibly the Brasilian Space Agency) which would seek to develop instructional materials for use in villages by village workers and teachers. These materials would be multi-mediated and the television component could be used through a communications satellite. The subject areas under development are agriculture, health and nutrition, and education. The India Satellite Project is still in the early stages of development, as is the Brasilian Satellite Project.

Washington University, St. Louis, is conducting research to examine both the potential and problems associated with the use of communications satellites for facilitating education in the United States. A major objective of their work is to make available to decision makers alternative satellite approaches, along with their educational, social, legal, economic and political implications. Washington University is also studying issues and trends related to the electronic delivery of vocational/technical and adult education, early childhood education, and education of the handicapped child.

A Summary of
Open Learning Delivery Resources
in Nebraska

The following summary indicates the existing resources in Nebraska that might be utilized in an open learning delivery system.

Public Television

Nebraska has a nine-station public television network, owned by the State of Nebraska. Its signal reaches virtually every television household in the state.

Commercial Television

Nebraska has 13 commercial stations, providing virtual blanket coverage to the state.

CATV

There are 43 community antenna systems in Nebraska, each of which carries programs of the Nebraska Educational Television Network, plus commercial networks.

Commercial Radio

There are 43 commercial radio stations in Nebraska, located in towns and cities in every geographical location.

Public Radio

Five public FM radio stations exist and all are owned by postsecondary institutions or secondary schools.

Newspapers

Nebraska has 20 dailies and 213 weekly newspapers.

Mail and United Parcel

Mail and United Parcel Service blanket the state.

Computer

Both the University of Nebraska and the state of Nebraska have sophisticated computer systems, and recent legislation directed establishment of a state computer plan in which the University of Nebraska is involved. The University of Nebraska and the SUN delivery system recently entered into an agreement with Control Data Corporation to investigate educational uses of computer technology.

Learning Centers

SUN has established learning centers in four locations spread geographically across the state and has received many expressions of interest from other educational institutions and libraries interested in establishing learning centers in cooperation with SUN.

Extension Correspondence Programs

The University of Nebraska-Lincoln has the largest correspondence program in the world, offering both high school and college courses.

Film and Videotape Libraries

Such libraries abound in Nebraska, and include several housed in the Nebraska Center for Educational Telecommunications in Lincoln, which also houses SUN. Most significant are the Great Plains National Instructional Television Library, the nation's largest distributor of mediated courseware, with 150 series or single programs, and the Nebraska Educational Television Council for Higher Education, with more than 500 lessons.

Production

Nebraska owns a public television and media production center with the highest quality production facilities and equipment. The center's facilities are used for production of SUN courses.

Open Learning System Plans and Programs

In cooperation with other postsecondary institutions and with libraries and secondary schools, the University of Nebraska has established a statewide open learning program (SUN). A State Advisory Council representing lay citizens and other educational institutions has been established to advise SUN on open learning programs and to cooperate in open learning planning.

State Media Associations

Many state media associations have been most supportive of SUN, indicating a willingness to cooperate in open learning. Among them are the Nebraska Library Commission, which has offered its statewide library resources to aid SUN students, and the Nebraska Broadcasters Association, which has committed itself to participate by adopting SUN as a public program for free radio and television spots.

Satellite Development

The University of Nebraska is keeping close watch on satellite development, and SUN officials have visited the Rocky Mountain satellite project in Colorado.

Telecommunications Networks

The state of Nebraska is making efforts, in which the University of Nebraska has been involved, to coordinate a statewide telecommunications system.

State Telecommunications Agencies

The Nebraska Educational Television Commission, appointed by the governor, decides policy for the Nebraska ETV Network housed in the Educational Telecommunications Center in Lincoln. Executive Secretary of the Commission and General Manager of the Network is Jack McBride, Executive Director of SUN and Executive Vice-President of UMA. The State Department of Administrative Services, an agency of the executive branch, has administrative and operational responsibility for non-television telecommunications, including telephone and related services and data processing. The University of Nebraska works closely with both the ETV Commission and the Department of Administrative Services in telecommunications planning.

SUMMARY

Potential delivery resources in the four UMA states have been thoroughly inventoried. Efforts are being made in the operational SUN delivery system in Nebraska to coordinate the use of existing resources in the state. As delivery system plans for the other states are developed during 1975, planners are expected to capitalize upon existing resources as appropriate, in order to avoid wasteful duplication of services and provide the greatest learner access to the system at the least cost.

CHAPTER IX
CONSORTIAL FUNDING PLANS

WORK ASSIGNMENT #9

> **Develop a plan to broaden the open learning fiscal base through multiple-year consortial funding, to include private and other public sources, and begin implementation of the plan.**

The development of a consortial funding plan has been an especially important UMA activity during 1974. There is a trend, as reported by the National Council on the Financing of Postsecondary Education, to shift an increasing burden of the cost of education to the individual student. This shift is illustrated by an increase in the total institutional income derived from student tuition and fees from 7.2% in 1961-62 to a total of 21.9% from the same source in 1972. In the UMA program, it will be essential to explore those sources of revenue which will serve to keep tuition and other student costs as low as possible, while providing the fullest possible access to those members of the public unable to avail themselves of college-level instruction on a traditional campus.

Recognizing the fact that NIE cannot and should not support the entire cost of development of UMA over the five year period, UMA and NIE have agreed that, as one of the terms of the NIE grant to UMA, UMA should work to develop a broader fiscal base through a plan for consortial funding. Such consortial funding would come from a variety of sources, both public and private. This chapter will report UMA's progress in developing such a plan and will detail UMA's success to date in obtaining external funding.

This chapter is divided into two sections. The first section includes a summary of the major outcomes resulting during 1974 from work on this assignment. There are two factors to be considered in developing a plan for consortial funding: kinds of support needed, and possible sources of that support. The second section includes an identification of both these factors, plus a summary of UMA success to date in receiving funds of the kind needed.

SUMMARY OF MAJOR OUTCOMES

- Categories of need for continued funding assistance were identified.
- Sources of funds were identified.
- Several grants were received, and other proposals were submitted.

NEEDS AND SOURCES

Categories of Need. The UMA Consortial Funding Plan recognizes four categories of need for continued funding assistance from sources other than NIE:

A. General Support. There is a continuing need for UMA to obtain unrestricted "seed money" to aid in the accomplishment of tasks specified in the five-year plan but not supported by NIE, and to serve as contingency funds for general administrative purposes.

B. Course Development. The development of open learning courseware is at once the most costly and the most critical activity UMA is engaged in. It is critical that UMA quickly build up to full speed, and that tuition money be brought into the system for the support of future operations. Particularly with the decrease in NIE support from the requested amount, it is necessary for UMA to seek large amounts of outside funding to support the development of individual courses.

C. Special Projects. From time to time, extra funding must be sought to support special short-term projects in research and evaluation, in innovative course development or delivery techniques, or in other areas not supported by public agencies. UMA will seek funding directly for such projects.

D. Course Delivery. Delivery system development is to be the responsibility of the individual states. Therefore, it will be primarily up to the states to locate sources of funding, above

> and beyond UMA funds, to be used for delivery system development However, UMA will provide assistance to the states in seeking such funding. It is anticipated that funds will be required by the states for such purposes as development of learning centers, and student assistance. UMA will help the states to identify potential sources of funding for these purposes, and will give whatever assistance is needed in seeking such funding. In some instances, a portion of general support funds available to UMA may be allocated to assist the states in delivery system development.

SUN and UMA have to date had success in seeking consortial funding in each of the four areas listed above. Details of progress to date are reported below, by area.

General Support. On October 1, 1973, SUN was awarded a general support grant of $200,000 by the Edna McConnell Clark Foundation. These funds were expended across all four areas listed above. The grant was used to pay consultant's fees, administrative salaries, course development salaries, expenses associated with the development of learning centers, and scholarships and other pilot delivery costs.

UMA is currently in the latter states of negotiations with the Ford Foundation regarding a grant of $700,000 for general support, to be allocated over a three year period. The original proposal for this funding was submitted in March 1974, and UMA and Ford staff have since been negotiating the purposes and terms of the grant. Current plans call for the bulk of the grant to go to course development and revision, and to assist the individual states in developing delivery systems. Course development funds from this grant would not go to the development of an individual Ford-sponsored course, but rather for such purposes as preplanning future course development efforts, supplementary funds for course being developed out of the NIE or other budgets, and detailed revision of courses following field test. Ford

Ford Foundation staff are optimistic that this grant will be approved by the Foundation within the next few months.

In September of 1974, a proposal was submitted to the J. M. McDonald Foundation, requesting a total of $40,000. Twenty-five thousand dollars was requested for general support; the remaining $15,000 was allocated between advanced planning for health related courses ($10,000) and scholarship assistance for the elderly and handicapped ($5,000). No action has yet been taken by the McDonald Foundation on this request.

UMA has received a preliminary grant of $5,000 from the Lilly Endowment Inc., to be used for general purposes of consortium development. A larger proposal to Lilly is in preparation, requesting funds for general support, and for specific course development activities in Japanese Studies and the world food problem.

UMA has been in touch with a number of other private and public funding sources, and plans to develop additional proposals for general support of the consortium as appropriate.

Course Development. In May of 1974, UMA received a planning grant from the National Endowment for the Humanities, for the planning of an open learning course in the Cultural History of the Great Plains. The grant totaled $92,530. A second proposal was submitted to NEH along with the pilot materials prepared during this first stage of the grant, and an additional grant of $325,000 has been received of NEH for pilot production of materials for the course.

A proposal has been submitted to the Hoso Bunka Foundation of Japan for preplanning support of a course development effort in Japanese Studies. A grant of $33,333 has been received of Hoso Bunka, effective February 1,

1975. These funds are to used for course team travel, supplies, and for the salaries of specialists who will seek out potential course materials in Japan. A proposal for partial production funding of this course is currently in preparation to the Corporation for Public Broadcasting. Additional production funding for the course is to be requested of the Lilly Endowment, Inc., in the proposal discussed under general support above.

A proposal was submitted to the National Endowment for the Arts in May of 1974, for production of an open learning course entitled "The Arts Today." It was the decision of the Endowment, however, that they were unable to support curriculum development efforts at this time. Other sources for support for this course development effort are currently being sought, and UMA may return to NEA at a later date, if their priorities should be altered.

UMA has been seeking to develop a relationship with the National Science Foundation, leading to submission of a proposal. Purposes of this proposal have not yet been determined, but ma/ well lie in the course development area. The biological sciences course being adapted by UMA was developed with NSF funds, and UMA may approach NSF for funding to assist in this adaptation process.

Special Projects. A special grant-in-aid of $25,000 was received by SUN from the Control Data Corporation in 1974. The purpose of this grant is to investigate the use of the CDC-developed PLATO IV Instructional Computer System in UMA course development and delivery activities. In addition to the grant CDC is providing consultants' services, computer equipment, and communicative services to SUN. UMA planners are also contemplating the possibility of submitting a proposal to the Technological

Innovation in Education division of the National Science Foundation for further experimentation with computer based education.

A proposal has been submitted to the Exxon Education Foundation for the planning of a cooperative relationship between UMA and the Open University of the United Kingdom. Funds from this proposal would be used to develop a plan for UMA adaptation of OU materials, and for cooperative joint course development efforts between UMA and the Open University. Both UMA and Open University staff have been in contact with the Exxon Education Foundation regarding this proposal, and prospects for its approval look good.

Delivery Systems. The SUN delivery system in Nebraska has successfully sought local funding in the development of two of its learning centers. The Lincoln Foundation contributed $7,700 towards the development of the pilot learning center in Lincoln. An additional grant of $10,000 was secured from the University of Nebraska Foundation to assist in the establishment of the center. A grant of $5,000 from the Bay State Foundation in Gering went towards the establishment of the SUN learning center in Scottsbluff. Local involvement was also secured from Kearney State College in the operation and maintenance of the SUN learning center in Kearney. While these grants were small, they are significant in that they demonstrate the local involvement in the SUN delivery system. In addition, funds from the Edna McConnell Clark Foundation general support grant have been used to assist in the establishment of learning centers, and have been used in the Nebraska delivery system for scholarship funds for needy students.

Sources of Consortial Funding

UMA has to date identified six potential sources of revenue during the five-year developmental period: (1) NIE, (2) other federal agencies; (3) private foundations; (4) UMA state assessments; (5) course leasing; and

(6) private business and industrial grants. Following initial developmental assistance from UMA, the individual state delivery systems will be supported from a combination of sources: tuition, state appropriations, grants from foundations, businesses, and professional organizations. Each state will set its own tuition rates, which may well be variable depending upon the type of course and the ability of prospective enrollees to pay.

The following paragraphs detail UMA/SUN funding activities to date, with respect to each kind of funding source. (Note: these paragraphs contain some of the same information as provided above, but in relation to funding source.)

NIE. Funding for UMA will come from both public and private sources, with an emphasis upon public support. The U.S. Department of Health, Education and Welfare has invested significant amounts of money in the UMA/SUN open learning program to date, and because of the potential national implications for the continued research and development of the UMA concept, there will be a continuing need to look to public sources during the next several years. NIE is currently the major source of research and development funds for UMA because of NIE's position as the educational research and development arm of the federal government.

Other Federal Agencies. A second potential source of funding for special purposes is federal government agencies (other than NIE), and quasi-governmental agencies. SUN received in 1974 grants of $92,530 and $325,000 from the National Endowment for the Humanities for planning phases of a course on the Cultural History of the Great Plains. A proposal for a similar course, "The Arts Today," was submitted to the National Endowment for the Arts.

Similarly, a science course has been discussed with the National Science Foundation. The Corporation for Public Broadcasting (CPB), through its staff and its ACNO (American Council of National Organizations) advisory body, is vigorously studying the feasibility of significant fiscal assistance to open learning projects. Their national study will be completed early in 1975. UMA is also discussing with CPB the possibility of CPB funding for the production of a course in Japanese Studies.

UMA is planning a proposal to the Environmental Protection Agency (EPA), for the funding of development of a multimedia training program for applicators of restricted-use pesticides. Recent legislation mandates certification of such applicators by EPA, and some EPA funds are available for materials development. This development effort is seen as a joint project of UMA, the University of Nebraska Cooperative Extension Services, Agricultural Extension agencies in the other UMA states, and the State Lead Agencies in the four UMA states.

UMA is also assessing the possibilities of obtaining funding for special projects from such agencies as the Fund for the Improvement of Postsecondary Education and the U.S. Office of Education. As areas of interest are located where UMA's needs coincide with the plans and priorities of these and similar agencies, proposals for such funding support will be developed.

Private Foundations. Results of SUN and UMA's contacts with private foundations to date are substantially reported above. These include the Edna McConnell Clark Foundation grant; the Lincoln Foundation, the University of Nebraska Foundation, and Bay State Foundation grants; the Lilly Endowment grant; and the proposals to the Ford Foundation, the Lilly Endowment, Inc., the Exxon Education Foundation, and the J. M. McDonald Foundation. The UMA

Office of Development and Technological Planning is continuing to develop contacts with individual foundations, to analyze their resources and priorities in terms of UMA needs, and to develop proposals as appropriate. Private foundations are seen as significant sources for support for new course development, and for special projects. Smaller local foundations in the UMA states may also provide excellent resources for learning center development or student scholarship funds for the individual delivery systems.

State Support. Presidents of the UMA institutions have expressed their commitment to the concept of state funding through their institutions to UMA. For the first five years of UMA operations, it is anticipated that such contributions will be in the form of course leasage by the individual states. Projected amounts of state funds to UMA were indicated in the five year cash flow model. By the end of the five-year period a mechanism will have been worked out for regular membership contributions to UMA.

The individual UMA states are expected to provide significant assistance in the development of statewide delivery systems. Since planning of the delivery systems is just getting underway, the specific plans for funding in the individual states have not yet been worked out. These plans will be reported to NIE as delivery system planning proceeds. It is understood by the state planners that initial plans will at least match NIE funds for delivery system development with state funds.

The SUN delivery system in Nebraska has prepared a budget for the fiscal year beginning July 1, 1975, for submission to the Nebraska State Legislature as part of the total University of Nebraska budget. This budget, as summarized in Table 20, may be representative of budgets for other states. Limited

Table 19. Fiscal year 1975 - 1976 projected budget, State University of Nebraska (SUN)

INCOME

Tuition	$ 190,625
Requested State Appropriation	157,790
	$ 348,415

EXPENSES

General, Academic and Student Services Administration	$ 116,272
Instruction	90,483
Learning Centers	77,910
Course Acquisition Expenses	63,750
	$ 348,415

additional funds for delivery will be made available to SUN from the NIE grant to UMA, and when the anticipated Ford Foundation grant to UMA is available, some of these funds will go for delivery system development.

Lease Income. The potential for leasing courseware produced by UMA to states and institutions outside the UMA region has been recognized as a vital source of income for the regional open learning system. UMA courses are to be distributed by Great Plains National Instructional Television Library.

Business and Industry. UMA recognizes that business, industry, and professional organizations may be appropriate sources of funding for special purposes in the open learning system. Control Data Corporation, a major international computer manufacturer, has awarded a $25,000 grant in aid to SUN, to permit experimentation in the use of the PLATO IV instructional computer system. CDC has also supplied SUN/UMA with two PLATO terminals to assist in the experimentation. Optional PLATO components are to be developed on a pilot basis for several UMA courses over the coming year, and the use of PLATO will be tested via the SUN delivery system.

Business and industry might also be a major source of course development funds in specific areas. For instance, UMA has made preliminary contact with the General Electric Corporation regarding their potential interest in funding the development of a UMA course in economics. United States firms doing business in Japan, such as Borg-Warner and Dow Chemical, are being studied by UMA as potential funding sources for the Japanese Studies course. Such major corporations as IBM, Xerox, and Mobil Oil have actively supported the development of public television programming, and might become a major source for future UMA course development funds. Business and industry support for development of delivery systems and for student aid might also be obtained from local and regional corporations in the UMA regions.

SUMMARY

UMA has had to date a considerable degree of success in seeking consortial funding for activities in each of the four areas of need, and is continuing to seek funding sources from each of these six above identified areas. UMA consortial funding plans and activities to date are summarized in Table 21. The chart shows UMA has received $703,563 in grants from sources other than NIE to date, and has $1,016, 678 in proposals pending.

Table 20. Summary of consortial funding plans and accomplishments as of February 1, 1975

	FUNCTION					STATUS				
SOURCE	GENERAL SUPPORT	INDIVIDUAL COURSE DEVELOPMENT	RESEARCH EVALUATION	SPECIAL PROJECTS	DELIVERY AND DISTRIBUTION	PRELIMINARY INVESTIGATION	PROPOSAL SUBMITTED	GRANT AWARDED	TOTAL REQUESTED	TOTAL GRANTED
LILLY	X	X	X	X	X	X		1/1/75		$ 5,000
[illegible]		X						3/13/74 2/1/75		92,330 325,000
CLARK	X							10/1/73		200,000
UNIVERSITY OF NEBRASKA FOUNDATION					X			6/6/74		17,[illegible]
[illegible] FOUNDATION					X			6/6/74		7,[illegible]
[illegible] STATE					X			8/1/74		5,000
[illegible] DATA CORPORATION				X				1/1/75		25,000
[illegible]		•						2/1/75		33,333
[illegible]		X					3/28/74		$190,711	
[illegible]		X				X				
[illegible]				X			1/22/75		79,967	
GENERAL ELECTRIC		X				X				
FORD	X						3/8/74		300,000	
[illegible]		X					2/13/75			
[illegible]	X	X	X				9/10/74		40,000	
CARNEGIE	X					X				
TOTAL									$1,[illegible]	$ 709,363

CHAPTER X
COURSE DEVELOPMENT

WORK ASSIGNMENT #10

> Design, produce or acquire, and evaluate two working prototype open learning multimedia courses to be ready for delivery system use and student enrollment by January, 1975.

Work Assignment #10 stimulated UMA to seek to accomplish two objectives: first, to have available by January, 1975, two courses ready for delivery in the SUN open learning system; secondly, to gain experience in the production, acquisition and modification of open learning courseware material in preparation for full courseware development efforts over the period of the next five years.

UMA actually moved in 1974 beyond the intent of this work assignment, by not only designing and producing one course, and acquiring and adapting a second course, but also actually offering both courses through the SUN delivery system, beginning in late September, 1974. Thus, UMA also had an opportunity to begin an evaluation of those courses.

The two courses developed during 1974 were selected on the basis of potential learner interest. Market surveys conducted during 1973, under previous grants to SUN, indicated that accounting and psychology were among the courses most desired by the potential SUN audience. Based upon these surveys, and upon the availability of previously-produced materials in accounting during pilot course development efforts, an early decision was made that Accounting I would be a course totally designed and developed by SUN as one of the two 1974 courses. In order to gain experience with the acquisition and adaptation of materials produced elsewhere, it was decided to seek extant materials in Introductory Psychology for adaptation to the SUN/UMA concept, as explained in Chapter VII.

This chapter is a report on the development and evaluation of these two courses. The evaluations are necessarily incomplete, since neither course had been completely finished at the time of this report.

The chapter is divided into three sections. The first section summarizes the major outcomes resulting from work during 1974 on this assignment. The next section describes the development of Accounting I, together with evaluative data about the first offering of that course. The third section focuses primarily on the evaluation of the first offering of Introductory Psychology. The adaptation of this acquired course was discussed in Chapter VII.

SUMMARY OF MAJOR OUTCOMES

- Accounting I was designed, produced, and offered to learners.
- A preliminary evaluation of Accounting I was completed.
- Introductory Psychology was acquired, adapted, and offered to learners.
- A preliminary evaluation of Introductory Psychology was completed.
- A revised instructional development process was constructed from experience developing Accounting I.
- A plan for developing student assessment measures was devised.

DEVELOPING AND EVALUATING ACCOUNTING I

Development

Accounting I, comprising half of a comparable first-year accounting course on a university campus, was developed principally between February and October, 1974. Prior to this time, preliminary work on the development of Accounting I was accomplished as a part of assignments under grants from the U. S. Office of Education and the National Institute of Education.

Responsibility for development of Accounting I was vested in a course team, composed of an instructional designer, accounting content specialist(s), senior producer, writer, evaluator, and several media specialists. Each team member had a generally defined role in the development process, although, since this was the first major UMA development effort, these roles were not always clearly delineated. Because of the lack of extensive prior experience in working together, the team understandably encountered some confusion over specific roles at various points in the development of Accounting I.

Actual development proceeded according to guidelines articulated by the instructional designer. As experience was gained, these general guidelines evolved into a 10-stage, 30-step instructional development process. That process is contained in Appendix V. The process is important, for it underscores the general development philosophy used in creating Accounting I. The process was by no means followed to the letter, but the general idea of the process was pursued.

Basically, the content specialists were responsible for selecting and ordering the course content, while the designer had responsibilities for structuring that content into appropriate instructional modes and sequence, and for developing instructional task specifications for producers and test developers. The producer and writers had responsibility for translating the content and instructional design considerations into the actual media. The evaluator had Field Test and test development responsibilities.

The selection and treatment of the content material in Accounting I is in some contrast with what is widely accepted within the discipline, as the arrangement of content stresses managerial accounting over procedural accounting, with the emphasis on decision-making rather than bookkeeping. The course was designed to systematically treat content material as instruction at different cognitive learning levels. An attempt was made to assign each medium a specific range of instructional tasks related to specific cognitive levels. Hence, each medium bears instructional weight with planned redundancy to allow for the greatest latitude of options for the learner. The design of Accounting I components allows for a broad range of branching options and "mini-courses," which will be implemented upon completion of Accounting II.

The course was designed to incorporate a variety of instructional media with each medium selected to fulfill a function commensurate with its capabilities. The media components of Accounting I are: 1) a textbook; 2) a study guide; 3) fifteen, 30-minute television programs; 4) sixteen, 30-minute (or less) audio tapes; and 5) sixteen newspaper articles. The textbook, study guide and audio tapes were sent to enrollees following registration. Television programs were available through weekly ETV broadcasts or video cassettes at one of the four SUN learning centers across the state. Newspaper articles appeared in the Sunday edition of the major statewide paper.

The Accounting I course includes 16 accounting topics within six units of instruction. Individual units vary from one to five topics. Typically, for each topic of instruction the enrollees are provided a brief newspaper article, an assigned textbook section, assigned sections in the Study Guide, an audio tape, and a television program.

The role of each of these components in relation to the content of a particular topic might be described as follows:

> Newspaper Article - Brief journalistic-style overview of major instructional elements of the topic.
>
> Textbook - Systematic and comprehensive treatment of the topic.
>
> Study Guide - Detailed step-by-step guide for the learner's study of the topic, including reading material amplifying textbook sections, embedded diagnostic questions, self-tests and QEP's (Questions, Exercises and Problems). Integrates utilization of text and audio tapes.
>
> Audio Tapes - Presentation of problems relating to the topic and assistance in their solution. Light dramatic format with characterizations continuing across tapes. Learner interacts with tape presentation; listening to problem, working it out, hearing correct solution.
>
> Television - Presentation of examples of key topic concepts using a variety of visualization techniques including vignettes, story lines, animation and musical renditions. Professional actors were employed as host, authority-figure and repertory group members.

Serving as Resident Content Consultants for the development of Accounting I were Pierre Titard and Richard Metcalf of the University of

Nebraska - Lincoln College of Business Administration. Instructional Developer for the course was C. Edward Cavert, UMA Director of Instructional Design. Executive Producer of the media components of the course was Marshall Jamison. A Senior Content Advisory Panel was identified and met in Lincoln to work with the course team in defining the objectives and content of the course. The Senior Content Advisory Panel consisted of academicians in the field from the UMA region and other parts of the country who reviewed and monitored course content and development. The panel included:

Dr. Elton A. Devine
University of Nebraska at Omaha

Dr. Thomas F. Keller
Duke University

Dr. Catherine E. Miles
Georgia State University

Dr. Herbert E. Miller
Arthur Andersen & Co.

Dr. Alfred R. Roberts
University of Missouri at Columbia

Dr. Robert E. Schlosser
American Institute of Certified
Public Accountants

Dr. Doyle Z. Williams
Texas Technological College

The Panel's input was important in striving for broad academic influence on course design and academic credibility for the resulting course. The Panel reacted to and gave critical judgments about specific aspects of the course developed by the course team. These suggestions were used by the team in improving the course content, design, and objectives.

This course was field tested during the first SUN course delivery period in Nebraska, September 1975 - January, 1976. A preliminary evaluation report is included below.

Preliminary Evaluation of Accounting I

At the time of this writing the first official offering of the course is not completed, so what is presented here covers slightly more than the first third of Accounting I. Interpretations should thus be limited. The results and conclusions reported in this section are, we believe, accurate at this time, but they should not be generalized to include the remainder of Accounting I, other courses, or the overall UMA/SUN concept.

The specific evaluation processes and methodologies used in ensuing UMA/SUN course development can be expected to vary somewhat from course to course. Nevertheless, the activities employed in the development of Accounting I are representative of those that will be used in the development of later courses. The principal evaluation activities conducted as part of the development of Accounting I included: 1) a pre-enrollment evaluation of course materials and procedures (Prototype Testing); 2) obtaining personalogical and demographic information from students enrolled in the course; and 3) obtaining achievement and appeal data from enrolled students (Field Testing). Each of these activities will be described briefly, the results to date from field testing will be presented, and some tentative conclusions regarding results obtained will be outlined.

Prototype Testing of the Courses. The general approach decided upon for the pre-testing of this first UMA/SUN course was to employ a two-part program. The first part, which most closely resembled a classic pilot test of courseware materials, was designated "Prototype Testing." This part of the program was to be initiated prior to the actual offering of the course to enrolled students. The second part of the pre-testing program was designated "Field Testing" and was to be conducted during the first two official offerings of the course.

Prototype Testing was intended to provide an initial viewing of the effectiveness of materials developed for a course by using a small sample of adults selected so as to be representative of the expected enrolled student population. It was to be conducted in a controlled setting, resembling as nearly as practicable the setting that would confront actual enrolled students. It was anticipated that this aspect of pre-testing would provide early indications of any major problem areas relating to specific content sections, particular media components, sequencing, pacing, etc. Any such gross problems could then be taken into account by the course developers prior to the public offering of the course. Field Testing, then, during the first two offerings of the course would be conducted with these problematical areas in mind, and the results of the two pre-testing phases would hopefully provide all the data necessary for the effective revision of courseware during the planned course revision period.

The decision was made to develop a two-phase plan for Prototype Testing. The first phase would involve obtaining data from representative students regarding their responses to a limited number of Accounting I television programs. These data would be shared with all members of the Accounting I Course Production Team as input for decision-making regarding revisions in later Accounting I television program production. Phase two of Prototype Testing would comprise a more systematic data-gathering process with respect to the course in its entirety. Each phase, it was decided, would entail the employment of separate small groups of students.

The persons selected for both phases of the Prototype Testing of Accounting I were selected to represent best expectations as to the actual enrolled student population. Four persons were utilized in the first phase and six in the second. Each of these groups of students was designated as an "Audience Reaction Team" or ART.

During the two sessions of the first phase of Prototype Testing, the ART viewed the first four television programs produced for Accounting I. Following each viewing, students completed two written evaluation instruments designed to ascertain student affective response to the program. In addition, an oral interview regarding the program was conducted and transcribed. A pre-test and post-test covering the subject content included in the four presentations were also administered. The data gathered from this phase were tabulated and summarized, and then shared with all interested parties. Although the ART data pinpointed some possible problematical areas in the television programs as produced (some of which resulted in changes made in ensuing programs), no major problems were identified.

The procedures instituted for the second phase of Prototype Testing were as follows. The ART was to meet once each week, principally to view and respond to the television program for the ensuing lesson and to engage in an oral interview concerning the television presentation and the preceding lesson overall. Between these weekly sessions, ART members were to study the other media components of the lesson and complete evaluation instruments relating to each. Not all of the course components were available in final form for use during Prototype Testing, but, with the exception of the Study Guide, the differences did not seem to be of a significant nature.

The written evaluation instruments administered to Prototype Testing students included the following: 1) two affective response instruments (an eighteen scale semantic differential form and a five to ten item Likert scale questionnaire) following each component; 2) a third instrument concerning affective responses to the actors used, following the television presentation; 3) three achievement tests at appropriate points through the course; and 4) an 'end of course' questionnaire.

Findings from the written evaluation instruments for the first six lessons in Prototype Testing, all that had been analyzed at the time of this writing, included the following: The overall affective responses to each media component in each lesson were consistently positive. The newspaper component was rated highest, while the audio tape and study guide components were judged lowest. Ratings across all components tended to decrease as the lessons continued, and in conjunction with this the students perceived the later lessons as considerably more difficult than earlier ones. All actors in the television component were given overall modest to high positive ratings. Analysis of the one achievement post-test administered during this period showed that the percentage scores ranged from 42 to 88 with a mean of 66. A pre-test had been administered prior to the commencement of the course. The mean gain score of post-test over pre-test scores was 27 percent.

The oral interviews produced the following principal findings: Regarding the television programs, following the initial period of adjustment to the presentation style, the students responded quite positively to the programs overall. They did, however, react negatively to the overuse of those sequences involving the presentation of material by the use of a rhythmic beat with instrument accompaniment. They also criticized the use of abstract devices in place of more realistic representation of actual accounting forms and procedures. With respect to the other media components, responses overall were generally favorable. These were tempered, however, with criticism of the audio tapes that increased over time. The 'entertainment' aspects of the audio tapes, continual reiteration of instructions regarding their use, and perceived over-redundance of material became increasingly annoying to most of the students.

Field Testing. A commitment to course revision is built into the UMA/SUN course development process. The Field Testing procedures for Accounting I have been devised to provide comprehensive data regarding student achievement appeal relating to various aspects of the course, the kind of data required for course revision decision making.

The general plan decided upon for Field Testing Accounting I consisted of two central parts; collection of a broad range of data during and following the first offering of the course, and a more focused data collection effort during the second offering. Data collected during the first offering would be general and inclusive, providing achievement measures, appeal responses across all media components within each lesson, an 'end of course' evaluation questionnaire, and student characteristics data. During the second offering, measurement of achievement would remain the same, but the collection of appeal data would focus on prpblematical content and/or media components identified from data collected during the first offering.

This report will detail only the procedures for the data collection process employed during the first offering. The presentation of findings and attendant discussion will be limited necessarily to what has been received and analyzed to date: student achievement measures, appeal responses relating to the first six lessons of the course, and student characteristics data.

It was recognized very early in the UMA/SUN course development process that it would be necessary to identify during the Field Test existing relationships between student achievement and appeal measures on the one hand, and personalogical/demographic data relating to enrolled students on the other. For this reason, a detailed instrument called a Student Information Questionnaire, or SIQ, was administered to all enrolled students in Accounting I. Of the more than 400 SIQ's that were sent to students, about 57% of enrolled students have returned their questionnaires to date. The following is a summary of the data from the SIQ's.

The average age of the (responding) students enrolled in the first offering of Accounting I is 39.6 years. Approximately half are between the ages of 35 and 55. Seventy-three percent are women, and 33% are homemakers. Nine percent are single, 84% are married, and 6% are widowed or divorced. Approximately 46% have mostly grown children, 38% have mostly young children, and 16% have no children.

Four percent of the students enrolled in the first offering have not finished high school, 13% have a trade, business or technical school diploma, 40% have a high school diploma, 28% have had 1-3 years college, and 8% have a college degree.

The most often cited "greatest concerns" of learners enrolled in the first offering were "academic and learning problems," "keeping up with the SUN schedule" and "lack of time and energy," each being selected by about 15% of the learners. "Simply to learn" was the most often selected goal.

Forty-four percent have no academic degree aspirations, while 10% hope for an associate degree, 27% hope for a bachelor's degree, and 2% hope for some other degree.

The factors most often selected as those which affected enrollment in the first offering of Accounting I were "the good reputation of the University of Nebraska," and other factors relating to the convenience of off-campus study.

The following procedures were employed in Accounting I in the administration of achievement tests. Prior to the time students were ready to take the first test they were contacted by mail and advised of the alternative means for taking the test. The students were given two options: They could come into a learning center at one of a number of prescribed times, or they could arrange through the learning center to take the test at a public library in the nearest county seat.

With respect to the results from the achievement test administered following the first six lessons, as of January 15, 1975, 180 students, or approximately 67% of these taking Accounting I for credit, had actually taken the first test. The scores on the 28 item test have been analyzed in two groups. The mean score for the group of 56 students who took the test during the ten day period after it was first offered was approximately

25, with scores ranging from 17 to 28. The mean score of the 124 students who took the test thereafter was approximately 22, with scores ranging from 11 to 28. The overall mean score of students taking the first achievement test in Accounting was 22.5.

The resident Accounting faculty member assigned grades according to the following schedule: 26 correct (92%) and above is 'A'; 23 correct (82%) and above is 'B'; 19 correct (67%) and above is 'C'; 16 correct (57%) and above is 'D'; and below 16 correct is 'F' or failing. For those electing the pass-no credit option, 16 is also the cut off point. In this first sample of 180 students there were, on this first test, 38 A's, 69 B's, 51 C's, 10 D's and 12 "No Credit." The grading schedule was arrived at by the Accounting specialist based on his own experience in teaching the course (which parallels Accounting I) on the University of Nebraska-Lincoln campus.

The general procedures for the collection of student appeal data during the first offering of Accounting I were relatively simple. A single page unit evaluation instrument, entitled "Tell Us What You Think" was distributed to students together with the instructional material for each unit. In Accounting I, a unit comprised from two to five lessons. Following an introductory lesson, five lessons made up the first unit. A letter accompanying the material instructed the student to complete and return the unit evaluation form following the completion of a unit, and stressed the importance of information on the form. To ensure a high degree of objectivity the form did not require any identifying information.

In addition to the specific questions asked on the unit evaluation form, there was a request for open-ended comments. The substance of the comments made with respect to the first six lessons will be summarized below. The nature of the comments made on particular forms was judged by the Office of Research and Evaluation on a five point scale from very positive to very negative. These data were then treated similarly to the other responses.

Slightly over 50% of the unit evaluation forms for the first unit of Accounting I were returned. Highest ratings relating to the first unit were given in response to questions concerning the student's overall rating, the amount of student interest, and the degree to which the student thought he had learned from the unit. Moderately high responses were given to questions regarding the clarity of the unit, its importance, and the amount of work required. Students typically found the materials to be somewhat difficult and many considered the pacing of the materials somewhat fast. All media components were judged overall to be Very Helpful or Helpful. The audio tapes, text and study guide were seen as Very Helpful. The newspaper and television components were rated Helpful, although the rating of the television programs tended slightly toward Not Helpful. The reporting of time spent in study probably does not provide trustworthy data, because students were unclear as to whether to report time spent per lesson or per unit.

One hundred and twenty-five (125) or about 60% of the respondents provided open-ended comments. The more prevalent of these may be summarized as follows:

Regarding the course as a whole, many (40 or more) regarded it as helpful or very helpful. A large number (25 or more) considered it generally as quite difficult or involving an inordinate amount of time. Lesson 6 was reported by about 16 as considerably more difficult than preceding lessons, and six people thought lesson 5 was very difficult as well. Seven students suggested a week of review should be inserted between units.

Nearly 50 of the students who provided open-ended responses were critical of the television component for a variety of reasons. Only a few students made explicitly positive statements about the television programs.

Very few students commented specifically on the text, although several did remark about errors found.

Students commenting on the Study Guide were inclined to suggest that more problems be given and that answers to the "Questions - Exercises - Problems" section be provided; and to report errors (5 or 6 in each case).

The Audio Tapes were considered Not Helpful by about a half dozen students, with only two reporting them as Helpful.

Regarding the toll free WATS line and the Learning Centers, about five in each case found them Very Helpful, while about three students had problems in making time connections.

Although it is not feasible at this point to draw definitive conclusions from the above findings, based as they are on data from about one third of the course, several tentative conclusions can be made.

First, the course overall seems to be well received by a large majority of enrolled students. The content is perceived as relatively difficult, time consuming and fast paced. Inasmuch, however, as the students consider themselves to be learning from the material and believe the work required to be about right, there does not seem to be any serious problem with the material as such.

Regarding the particular course media components, the findings from field testing do not at this point reveal any major problems with the Newspaper, Text, Study Guide or Audio Tape components (the findings with respect to the last two being at some odds with the findings from Prototype Testing, it is to be noted). The Television component did elicit negative comments or ratings on the part of about a quarter of the respondents, but more than 75% reported that the television programs were Helpful or Very Helpful. It would seem judicious, however, during the remainder of field testing, to pay very close attention to students' use of and response to the television programs.

There do appear to be some problematical areas with respect to particular components or aspects of the course (e.g., printing errors, Study Guide deficiencies, the need for review period, etc.), but none of these seem to be critical or insurmountable. Overall the difficulties generally seem to pale in the presence of the widespread approval and commendation of the course thus far on the part of enrolled students.

Detailed data on the Accounting I course will continue to be collected and analyzed during the first two offerings of the course in Nebraska, and a full evaluation report on the course will be submitted when the field test is completed.

EVALUATING INTRODUCTORY PSYCHOLOGY

SUN's acquisition and adaptation of course materials in Introductory Psychology have been reported in Chapter VII of this report. Like Accounting I, the psychology course was field tested during the pilot SUN delivery period in late 1974. A preliminary evaluation report is included below.

This section describes the evaluation activities conducted by the Office of Research and Evaluation as they relate to Introductory Psychology. The data are not complete, for, at the time of this writing, the first offering of Introductory Psychology is not complete. The data presented in this chapter are from the first fifth of the course offering, and need to be carefully interpreted as such. As with the Accounting I course, it is important to point out certain cautions in the first evaluative data regarding Introductory Psychology. Results obtained from the first fifth of the course may be quite different from data collected on the second offering of the same course. Furthermore, some of the data gathering techniques may need to be revised.

Whereas Accounting I is a UMA/SUN developed course, Introductory Psychology is an adaptation of an introductory course developed by Communication Research Machines (CRM) and the University of California at San Diego (UCSD). Furthermore, Introductory Psychology did not undergo prototype testing as did Accounting I.

History of the Field Testing Plan

Field testing of Introductory Psychology has been underway since November, 1974. Although most of the techniques being employed in field testing Introductory Psychology are very similar to the evaluation activities in Accounting I, the history of the Introductory Psychology course has affected the way in which the course's evaluation was planned. A pretest of Introductory Psychology materials on a small experimental group (prototype testing) was not undertaken before releasing them for a state-wide field test.

The Introductory Psychology course was purchased from another source and then revised by a UMA/SUN course team. Legal rights were obtained for use of the textbook, films, study guide, quizzes, and some tests. The textbook and many of the films were used in their original form. The study guide, quizzes and tests were used extensively in creating adapted versions of a study guide, self check quizzes, and examinations. In the end much of the acquired material, which has been used with students in other settings, was included in the Introductory Psychology course. It was felt not necessary to subject materials used previously to pilot or prototype testing with small samples of subject in an experimental setting. The assumption was that these materials were ready for use with learners in a field setting.

A second reason for deciding not to prototype test the Introductory Psychology course in an experimental setting was that the materials had been subjected to the scrutiny of several groups of experts before they were purchased. Faculty members from the Psychology Department of the University of Nebraska, television directors and producers, instructional designers, and educational specialists were among the groups that were responsible, in part, for the choice of the course. The additional cost required to prototype test Introductory Psychology did not seem justified in view of the course's history. Further evaluation of the course's effectiveness, as a teaching tool, occurred as a field test with learners who enrolled in the course.

Two Offerings of Introductory Psychology

The plan to offer Introductory Psychology (and Accounting I) twice, in succession, before making revisions greatly affected the original design for field testing. The whole UMA/SUN staff was concerned about two important issues: (1) how to find out what students learned from, and thought about, their course; (2) how to maintain student cooperation and good will throughout the data gathering process. The two consecutive offerings of Introductory Psychology made it possible to plan first a comprehensive field test, and then a focused field test, using two groups of students. However, there did seem to be one major constraint involved in two consecutive offerings of the course. Course teams were concerned that if an area of the course (for example, several pages of reading in the text) proved ineffective in teaching some course concepts, there would be no opportunity to make corrections until after another group of students had taken the course. Quickly prepared "add-on" materials were chosen as a stop-gap method to correct any major problems.

It was decided to use two offerings of the course as a way to gather different kinds of evaluation information. The field test of the first offering was designed around some broad issues, like overall appeal and quality of each unit, efficiency and effectiveness of the delivery system and the learning centers as specifically related to Introductory Psychology, gains in cognitive achievement, and changes in personal goals. The second offering will focus on more specific aspects of the course which seem to be weak for either cognitive or affective reasons. The second stage of field testing is being planned for Introductory Psychology; the data for planning this stage are still being considered. Among the foci considered for the second offering are: student's use of the study guide; student pacing; the importance of graphics and color photographs in the printed materials; the pleasure and instructional value obtained from the television component; the personal goals achieved by students in the course; and differences between students who take the course for credit and no credit.

The First Offering of Psychology

The broad issues for the first offering's evaluation activities were: overall appeal and quality of each unit; efficiency and effectiveness of the delivery system and the learning centers (in relation to Introductory Psychology only); gains in cognitive achievement; and changes in personal goals. The following instruments are being developed or are already in use: an end-of-course interview; and end-of-course student evaluation form; a telephone interview; and a unit rating form. Each of these instruments has a specific focus and is reviewed below.

An end-of-course interview will be conducted with a sample of students concerning their personal goals for the course, whether these goals have changed or altered, their feelings about the course as a whole, and the kinds of learning experiences that might interest them in the future. An interview has been chosen as a desirable way to explore more completely issues that cannot be explored adequately through written answers. In addition, an end-of-course questionnaire will be mailed to all students. The end-of-course questionnaire will inquire about specific reactions to the course (e.g., "Did you find it stimulating?") and request suggestions for changes in the course.

Telephone interviews are being conducted three times during the fifteen week period with different students each time. These telephone calls focus on the efficiency and the effectiveness of the course delivery system. Questions are asked about the student's interaction with the faculty members, use of the learning centers, and delivery of course materials to the home. The basic purpose of the interview can be summed up in the question, "Are you getting what you need to aid your studying?"

A fourth evaluation instrument is a unit rating form, with items requesting student ratings on that unit's pacing, difficulty, interest, and amount of work. An additional item asks them to rate the helpfulness of each media component for that particular unit. Finally, general student comments are solicited.

Some Characteristics of Students Enrolled in the First Offering of Introductory Psychology

The average age of the 275 students enrolled in the first offering of Introductory Psychology is 38.6 years. Approximately half are between the ages of 35 and 55. Eighty-three percent are women, and 41% are homemakers. Fifteen percent are single, 79% are married, and 6% are widowed or divorced. Approximately 46% have mostly grown children, 36% have mostly young children, and 17% have no children.

Seven percent of the students enrolled in the first offerings have not finished high school, 15% have a trade, business or technical school diploma, 48% have a high school diploma, 26% have had 1-3 years college, and 4% have a college degree.

The most often cited "greatest concern" of learners enrolled in the first offering was "Academic and Learning Problems...", selected by 22% of the learners. "Simply to learn" was the most often selected goal.

Thirty-three percent have no academic degree aspirations, while 14% hope for an associate degree, 31% hope for a bachelor's degree, and 22% hope for some other degree.

The factor most often selected as that which affected enrollment in the first offering of Introductory Psychology was wanting to live at home while attending college, chosen by 25% of the learners.

The above information is compiled from registration form data and from responses to the Student Information Questionnaire sent to all students and returned by 72% of the students enrolled in Introductory Psychology during the first offering.

Student Assessment in Introductory Psychology

Because of the modifications made by SUN to the acquired CRM/UCSD course, it was necessary for UMA to develop its own testing system. This section describes an analysis of the first test taken by a portion of the students, as well as the student assessments of the first three units of instruction.

The tests were administered in the same manner as the Accounting I tests, with the exception being the pre-distribution of the trial tests and accompanying feedback.

The trial tests looked essentially like the real tests, except that the cover sheet explained how the trial test might be used and interpreted. It was suggested that the student study until ready to take a test. The student was advised to then attempt the trial test under conditions similar to the graded test, e.g., without the aid of book or study materials. After taking the trial test, it was recommended the student should check answers and read the feedback to the questions about which (s)he was uncertain. The feedback of two or three sentences of explanation and page references was provided in a separate booklet that had been stapled on all four corners. The student was instructed to snip off three of the corners to separate the pages so that (s)he could check the answers and read the comments. This method was to encourage the learner to treat the trial test as a real test, to help insure that the scores would be comparable.

As of January 22, 1975, 161 or 58% of the Introductory Psychology students had taken the first 48-item credit exam. The scores ranged from 11 to 46 correct, with a mean of 35. The grading scale, based on the course professor's judgment, his experience with similar courses, and the opinions and practices of other professors of introductory psychology courses, is as follows: 42 (88%) and above is an 'A', 38 (79%) and above is a 'B', 33 (69%) and above is a 'C', 27 (56%) and above is a 'D', and below 27 is "No-Credit". Of the first 161 students who have taken the first examination, there were 26 A's, 38 B's, 47 C's, 35 D's and 15 "no-credits".

Studies are planned by which further assessments of the validity of the tests and the grading schedule can be determined. It appears, however, that the present schedule compares favorably with grading practices used in similar courses using tests of lower difficulty.

Overall, the item statistics look fairly good. The toal test had a Kuder-Richardson Formula #20 reliability coefficient of .83, which is considered to be quite adequate, given the reservations about the utility and validity of such statistics. The indices of discrimination suggest that three items will need to be revised. Inspection by the course professor revealed that the material for one of these items was not well covered in the text, and that the other two items were ambiguously written. The students who have already taken the test will have their scores adjusted accordingly.

The classical item statistics were more applicable to this test than they were to the first Accounting I test, because of the greater variability of scores and the higher level of difficulty of the items. No items were answered correctly by all. Fourteen of the 48 items were answered correctly by more than 90% of the students, but another 16 items were answered correctly by less than 70% of the group.

It is still too early to judge the worth of the trial tests. Informal feedback via the learning center coordinators is that the trial tests have been well received and appreciated. More questions will be asked about these trial tests in future evaluations.

Unit Ratings

Introductory Psychology students were randomly assigned to a group for rating units. It seemed unreasonable to ask every student to rate each unit since there are fifteen units in all, one for each week.

Instead, each student received forms for six units placed inside his/her study guide. There were approximately ninety students assigned to each of three groups. Group A students were asked to rate Units 1,2,3,13,14, and 15. Group B students rated Units 3,4,5,6,7, and 8 while Group C rated 8,9,10,11,12, and 13. Comparison of the similarity between group responses will be made on Units 3,8, and 13*.

Unit rating forms are the only field testing instruments for which data have been collected and analyzed at this time. As of December 31, 1974, about 50% of the forms were returned on Units 1,2, and 3:

Unit 1 - Approximately 90 forms sent out and 51 (57%) returned.

Unit 2 - Approximately 90 forms sent out and 49 (54%) returned.

Unit 3 - Approximately 180 forms sent out and 81 (45%) returned.

As a group, students enrolled in the first offering of Introductory Psychology:

Gave an overall rating to each of the first three units as "Very Good."

Reported each of the first three units as "Reasonably Clear."

Rated the pacing of materials in Unit 1 and Unit 3 as between "Just Right" and "Somewhat Fast", while Unit 2 was rated as "Somewhat Fast."

Rated each of the first three units as tending toward "Somewhat Difficult".

Rated each of the first three units as "Fairly Interesting" to "Very Interesting".

Tended to spend between 4-6 hours on Unit 1, between 4-9 hours on Unit 2, and between 7-9 hours on Unit 3.

---

*A comparison of Group A and Group B responses on Unit 3 evaluation forms showed no significant statistical difference (t-tests) between the responses to items on the unit evaluation form.

Reported that for each of the first three units they learned "Some" to "A Great Deal".

Considered their learning in each of the first three units to be "Important" or "Very Important".

Tended to report the total amount of work in each of the first three units as "Just Right".

Most frequently used the newspaper, television, text, and study guide as resources.

Found the newspaper component to be helpful for each of the first three units.

Reported the television component to be "Helpful" for each of the first three units, and especially for Unit 2.

Found the text or assigned readings for each of the first three units to be "Helpful".

Reported use of the study guide for each of the first three units to be "Helpful" or "Very Helpful".

Did not use the toll-free telephone line or learning centers frequently, but found them "Helpful" or "Very Helpful" when employed.

Made comments which were judged to be positive, neutral, and negative on each of the first three units.

Offered critical comments for the improvement of the course.

Given the incomplete set of data available on the first offering of Introductory Psychology, it is not judicious to draw definitive conclusions. A more complete set of data will be available following the first course offering. The more complete set of data will include unit evaluation responses on all 15 units of Introductory Psychology, achievement test data from all five tests, telephone responses from individual students, and end-of-course evaluation form completed by students and student interviews. The more complete set of data will also help to focus on specific evaluation issues during the second offering of the course.

Following the second offering of Introductory Psychology, it should be possible to locate specific aspects of the course which could be revised for improvement.

The course professor did offer the following general conclusions from the data available on the first three units of Introductory Psychology:

1. Although students found the material from all three units difficult, this did not adversely affect the interest level or amount learned for each unit.

2. Even though the material was difficult, it was viewed as important and clear. Material difficulty alone is not sufficient cause to revise material or to consider changing texts.

3. The somewhat fast pacing of the course is confirmed by the fact that students were studying two to three times longer than originally predicated and that the amount of work is judged to be too much by some. Slowing the course down may see a corresponding drop in student hours per week studying. This may eventually lead to a change in the rating of "the amount of work for the course". One solution might be to program video breaks around test times throughout the course.

4. All instructional components of the course were helpful. (A) The rating for the Study Guide may be inflated as it is the only place in which the assigned reading appears. (B) The low number of respondents on the use of the Recommended Readings may indicate a low usefulness of the material, but also may be a product of the low accessibility of the material. Steps need to be taken to either upgrade the Recommended Readings, make them more accessible, or eliminate them.

5. The absolute number of students was low, but for those taking advantage of them, the toll-free telephone line and the learning centers were equally useful. However, it is too early to assess the utility of these two resources.

As testing periods approach, and as some students use a pace different from our weekly schedule, there may be a substantial increase in the use of both resources.

6. It is somewhat curious that some people can find assigned and necessary readings "Not Helpful". Since test items come from this material, and since this contains the heaviest instructional load, how can it be anything else but helpful? Does "Not Helpful" mean that the student would have done just as well on that unit without reading the required material?

Detailed data on the Psychology course continue to be collected through the first two offerings of the course in Nebraska. A full report on this field test will be submitted when complete data are available.

SUMMARY

The two SUN courses produced and acquired under this Work Assignment are currently being field tested during the second SUN delivery period in Nebraska. Full evaluation results will be compiled on the two field tests and reported to NIE. The experience gained in course development, acquisition and adaptation procedures will serve to guide future UMA efforts in these areas.

These initial course development efforts have demonstrated that the team approach to course development does appear workable. Several revisions in the general course development process have been suggested by this experience. This process will continue to undergo refinement as UMA gains more experience in actual course production in the coming months.

CHAPTER XI
PLANNING FOR COURSE DEVELOPMENT IN 1975

WORK ASSIGNMENT #11

> Tentatively identify content consultants and national disciplinary associations and otherwise complete the advance planning for the systematic development and evaluation of eight or more additional courses to be designed, produced and/or acquired during calendar 1975.

The purposes of Work Assignment No. 11 was to prepare the way for UMA course development activities during 1975. Eight or more course areas were to be selected for further investigation, availability of acquirable extant course materials was to be investigated, and tentative identification of resident content consultants and Senior Content Advisory Panels were to be established with the input of national disciplinary associations where appropriate.

Eleven courses were selected for development during 1975, dependent, of course, on funding levels for that year. This number was selected in line with the five year cash flow projections, as outlined in Chapter III.

The eleven courses actually selected, as described below, are the first eleven courses from the Academic Council list of course areas having highest priority for immediate development. These courses were selected by the Academic Council with a number of factors in mind: overall balance of a college-level curriculum (e.g., Biological Sciences, Great Plains, Cultural History, American Literature, Economics, Expository Prose, the American Political Process); special needs of subpopulations in the UMA area (e.g., Computer Science, Consumer Experience, the Pre-

School Child, Nutrition); availability of acquirable materials for adaptation to the UMA concept (e.g., Computer Science, Bilogical Sciences, Consumer Affairs); and the previous experience of UMA course development staff in developing materials in a content area. It should be emphasized, however, that the identification of these course areas by the Academic Council does not commit UMA to develop course materials in all areas during calendar 1975. In some instances, the final decision to develop materials must wait evaluation of acquirable materials for their acceptability, or availability of outside funding to help support the course production process.

This chapter is thus a review of these eleven courses identified for development during 1975 and, when such data are available to date, a review of intended content advisory panels for these courses. The chapter, following a brief summary of major outcomes resulting from work in this assignment, is divided into discussions of each of the eleven courses, plus a section on additional course planning activities that are underway.

Course preplanning is a vital aspect of the overall UMA course development procedures. It should be noted that the proposal currently pending with the Ford Foundation includes provisions for a significant amount of money for preplanning. While some of this preplanning did occur during 1974, the process must continue to be refined during 1975.

SUMMARY OF MAJOR OUTCOMES

- Eleven courses were identified for development and/or acquisition/adaptation during 1975.
- Senior Content Advisory Panels have been established for many of these courses.

- Course preplanning activities have commenced with respect to two additional courses.

COMPUTER SCIENCE

Course materials in Computer Science, entitled "Making it Count," have been acquired from the Boeing Computer Corporation. These materials were screened by a Senior Content Advisory Panel of Computer Science faculty members from UMA institutions:

Professor Jack B. ReVelle
University of Nebraska at Omaha

Professor George Haddix
University of Nebraska at Omaha

Professor George Nagy
University of Missouri - Rolla

Professor Arlan DeKock
University of Missouri - Rolla

Professor Earl Schweppe
University of Kansas

The acquired materials were favorably reviewed by this panel, and it was decided that the materials would be field tested through the SUN delivery system in Nebraska without substantial adaptation. The Panel did recommend, however, that the quizzes included in the student manual be supplemented by unit examinations, and that a weekly newspaper component be added to the course. Professor Doris Gardner of the University of Nebraska-Lincoln Computer Science Department was selected as resident content consultant to undertake these revisions, and to serve as SUN faculty member during the field test of the course. Further revision of the course may be undertaken, based upon the results of the first field test.

BIOLOGICAL SCIENCES

Negotiations are nearly completed for the acquisition of materials in the biological sciences from the Biological Sciences Curriculum Study. These materials consist of a number of partial-credit minicourses, arranged according to subject matter in twelve clusters. The total package of minicourses amounts to two full years' college-level study in the biological sciences. This course is especially significant, in that it will be UMA's first experience with developing modular course materials, which allow different entry and exit levels according to the varying needs of individual students.

The course materials in biological sciences were developed for BSCS under the direction of Dr. Samuel Postlethwait of Purdue University. Dr. Postlethwait has agreed to serve as Senior Course Advisor to the UMA adaptation of these materials. UMA will seek to hire as instructional developer for the course a member of Dr Postlethwait's development staff who is already familiar with the materials. The major adaptation to be undertaken in the course is to make all materials fully transportable, so that the student is not required to attend on-campus laboratories.

GREAT PLAINS CULTURAL HISTORY

Materials for a course in the Cultural History of the Great Plains are being developed by UMA, under grants totalling $417,000 to date from the National Endowment for the Humanities.

The original idea for this course was suggested by Dr. Henry Steele Commager, who served as Senior Course Advisor, along with Dr. Sidney E. Ahlstrom and Dr. Henry Nash Smith, during the first phase of the course development process. During this phase, the general course outline was planned and three units were developed to preproduction stage, under the leadership of Nebraska historian Robert Manley. These materials were submitted to NEH for review, and a grant was approved for the pilot production phase of the course.

During Phase II, from February 1, 1975, to October 1, 1975, all instructional materials for two units of the course are to be designed, written, produced and evaluated. Content consultants for this phase of the course development process are Dr. Gene Gressley, University of Wyoming, and Dr. Homer Socolofsky, Kansas State University. The Senior Content Panel will consist of Dr. Howard Lamar of Yale University, Dr. Alan Bogue of the University of Wisconsin, and Dr. Waldo Wedel of the Smithsonian Institution. Materials produced during this second phase of the course development process will be submitted to NEH by October 1, 1975, along with a proposal for the full production of the course materials during 1976.

CONSUMER AFFAIRS

Course materials in consumer affairs, entitled "The Consumer Experience," have been acquired from the University of Wisconsin-Green Bay. These materials have been initially evaluated under the direction of Professor Joan Anderson of the University of Nebraska-Lincoln College of Home Economics, who is serving as resident content consultant for the course, and will serve as faculty member during the SUN delivery of the course. The course will be field tested intact over the SUN system, with student assessment materials and newspaper component added under the direction of Dr. Anderson. A Senior Content Advisory Panel is being selected to plan possible adaptations, after the Nebraska field test. The following members of the panel have been tentatively identified:

Dr. Richard L. D. Morse
Department of Family Economics
Kansas State University

Dr. Karen D. Hull
Department of Home Management
Iowa State University

Dr. Edward Metzen
Department of Home Economics
University of Missouri - Columbia

Dr. Joan Anderson
Department of Education and Family resources
University of Nebraska - Lincoln

AMERICAN LITERATURE

Extensive discussions have been held concerning possible development of a course in American literature, or a course in American Studies with some concentration in literature, with the American Studies faculty of the University of Nebraska - Lincoln, and with the National American Studies Faculty. Several potential members of a Senior Content Advisory Panel have been identified:

Dr. William Jones
University of Missouri - Kansas City

Dr. Richard Herrnstadt
Iowa State University

Dr. Norman Hostetler
University of Nebraska - Lincoln

Dr. Norman Yetam
University of Kansas

Dr. J. M. Sosin
University of Nebraska - Lincoln

Dr. Leon Dickinson
University of Missouri - Columbia

Dr. Rom G. Billingsly
University of Colorado

Dr. Christof Wegelin
University of Oregon

Dr. John Willinham
University of Kansas

Dr. Kenneth Johnson
Kansas State University

A joint project in American Studies is under development between the University of Nebraska and the University of Kansas. It is hoped that the development of UMA course materials in American literature or American Studies might be coordinated with this project. Materials in American literature from the University of California - San Diego Second Course by Newspaper, entitled "In Search of the American Dream," are being subjected to preliminary review for content and approach by consultants from the UNL American Studies department.

INTRODUCTORY ECONOMICS

Preliminary planning for the course is proceeding with Professor Richard Attiyeh of the University of California - San Diego and Professor Keith Lumsden of Stanford University. The General Electric Corporation has been approached as to their potential interest in underwriting the development of costs of such a course. Meanwhile, materials in economics developed by Illinois State University, the Milwaukee area Technical Colleges, and Maryland Public Television, are to be given preliminary review by the Senior Content Advisory Panel. The following names have been suggested as potential panelists:

Dr. Campbell McConnell
University of Nebraska - Lincoln

Dr. Robert Thomas
Iowa State University

Dr. Paul Samuelson
Massachusetts Institute of Technology

Dr. Curtiss Adams
University of Missouri - Rolla

Dr. Christopher Garbacz
University of Missouri - Rolla

EXPOSITORY PROSE

Preliminary discussions have been held with Professor Jack Carpenter of Kansas State University regarding a course in composition. Course materials developed at the Dallas Community College District, entitled "Writing for a Reason", are to be evaluated by a Senior Content Advisory Panel for possible adaption by UMA. Potential panelists in addition to Dr. Carpenter, include:

Dr. James Gowan
University of Kansas

Dr. Peter Zoller
Wichita State College

Dr. William Lendren
University of Wisconsin - Madison

Dr. Jess Hartley
University of Houston

Dr. Stoddard Malarkey
University of Oregon

Dr. Howard Norland
University of Nebraska - Lincoln

Dr. Thomas Restul
University of Nebraska - Lincoln

THE PRESCHOOL CHILD

Course materials developed by the Educational Development Center entitled "Exploring Childhood" have been given a preliminary screening by UMA staff. The Academic Council has suggested the following faculty members as potential members of a Senior Content Advisory Panel to consider adoption of these course materials:

Professor Marjorie M. Stith
Kansas State University

Professor Edythe Glass
Iowa State University

Professor Dianne Draper
Iowa State University

Professor Irma Galejs
Iowa State University

Professor Kathyrn Madera
Iowa State University

Professor Damaris Pease
Iowa State University

Professor Frances Horowitz
University of Kansas

Professor Barbara Etzel
University of Kansas

Professor Nan Ashley
University of Nebraska - Lincoln

NUTRITION

Course materials developed at Michigan State University are to be reviewed by UMA staff for potential acquisition. Materials in this area are also being developed by the University of Wisconsin-Green Bay during 1975, and pilot materials will be reviewed by UMA as they are available. Preliminary contact has been made with the faculty of the Departments of Home Economics at the University of Nebraska-Lincoln and Iowa State University regarding potential panelists for this course, and the UMA Academic Council is also drawing up a list of candidates. The following potential members of a Senior Content Advisory Panel have been contacted:

Dr. Marie Cross
University of Kansas

Dr. Thelma McMillan
Iowa State University

Arnold Schaeffer
Director
Swanson Center for Nutrition
Omaha, Nebraska

AMERICAN POLITICAL PROCESS

Preliminary discussions regarding a Political Science course have been held with Professor Adam Breckenridge and Professor Robert Miewald of the University of Nebraska - Lincoln Department of Political Science. Course materials developed by the University of South Carolina are currently under review, and preliminary contact has been made with Stanford University regarding a course in American Government. UMA staff have been in touch with Dr. Walter Beach of the American Political Science Association, and he has suggested the following names as potential panelists:

Dr. Micheal A. Baer
University of Kentucky

Dr. Malcolm E. Jewell
University of Iowa

Dr. Martin Diamond
Northern Illinois University

Dr. Carl E. Schwarz
Fullerton College, California

In addition to the above, the following potential panelists have been suggested by Academic Council members and members of Political Science Departments of the UMA Universities:

Dr. Naomi Lynn
Kansas State University

Dr. Shanto Iyengar
Kansas State University

Dr. William Wellman
University of Wisconsin - Madison

Dr. J.A. Shakeshaft
Iowa State University

Dr. Charles Wiggins
Iowa State University

Dr. James Hutter
Iowa State University

Dr. James McGregor Burns
Williams College

Dr. Henry Eulau
Stanford University

ACCOUNTING II

Accounting II is to be developed, not as a separate course, but as a continuation of the materials developed as Accounting I. Accounting I and Accounting II will offer a full year of study in general accounting, but the materials in these courses may be recombined in modular fashion to make up a number of different courses on specific topics in accounting: the preparation of financial statements, bookkeeping, budgeting, etc. Since this is a continuation of Accounting I, the same Senior Content Advisory Panel will remain in place. The Resident Content Consultant for the course is Dr. Richard Metcalf, who served in a similar capacity on the Accounting I course team.

There have been some changes in course development procedures for Accounting II, and these will be reflected in revision of the Accounting I materials before the full Accounting course is finally released. The major change in the course will be the addition of a series of "Checkpoints," which are diagnostic self tests. The Checkpoints will keep the learner informed of his own progress through the course, and help to keep up learner momentum. These tests will be supplied to learners in booklet form along with course materials for both Accounting I and Accounting II. They will also be made available, on a pilot experimental basis, via the PLATO instructional computer system. The Checkpoints, in both print and PLATO form, will be available for learner use upon completion of the Accounting II materials by the end of 1975. There will also be revision of the print, television, and audio materials of both Accounting I and II, as called for by field test results.

ADDITIONAL COURSE DEVELOPMENT ACTIVITIES

In addition to the eleven courses tentatively selected for development during 1975, two other course areas have been identified for development with funding from external sources. A course in Japanese Studies is being developed under the direction of Dr. Edwin O. Reischauer of Harvard University, former U.S. Ambassador to Japan, who will serve as Senior Course Advisor. Dr. Jackson Bailey of Earlham College, Richmond, Indiana, will serve as resident content consultant. Television materials for this course will be acquired from NHK, the Japanese broadcasting organization, and other Japanese sources. These materials will be assembled into a thorough course in Japanese history and culture following an outline prepared by Dr. Reischauer. A grant of $33,333 has been received of the Hoso-Bunka Foundation of Japan, for use principally for the location of materials. Proposals to the Japan Foundation and the Expo '70 Fund are planned, as is a further proposal to the Hoso-Bunka Foundation. Funding support from U.S. agencies, such as the Corporation for Public Broadcasting, is to be sought for the actual production of course materials. Dr. Reischauer's outline of the course has been approved by a Senior Content Advisory Panel consisting of the following members:

Professor John W. Hall
Department of History

Professor David W. Plath
East Asian Studies Program
University of Illinois - Champaign - Urbana

Professor Solomon B. Levine
East Asian Studies Program
University of Wisconsin - Madison

Writers for the individual units for the course are currently being sought. Unit outlines will be prepared, critiqued by the Senior Content Advisory Panel and revised during the spring and summer of 1975. Materials will be located in Japan during the late summer of 1975, and brought to UMA headquarters for final production. The full course development team is to be assembled in September of 1975, to undertake final production.

A non-credit training program in the application of pesticides is also being planned for development by UMA, in response to federal legislation mandating certification of users of restricted-use pesticides. UMA has worked iwth the University of Nebraska Cooperative Extension Service in developing pilot materials for such a training program. UMA has assisted an experimental research project of Cooperative Extension in the development of audio-tutorial and print materials in the application of pesticides.

Based upon the outcomes of this project, UMA and Cooperative Extension plan to submit a proposal to the Environmental Protection Agency, in cooperation with agricultural extension departments in the other UMA states, for the development of a training program which employs television, broadcast radio, and print materials. Professors John Furrer, Robert Roselle, and Robert Florell of the University of Nebraska Cooperative Extension Service have worked with UMA in the development of these pilot materials, and are expected to continue as resident content consultants or senior course advisors. These consultants and UMA staff are currently working with State Lead Agencies in the four UMA states to develop a plan for the cooperative development of course materials for use throughout the region.

SUMMARY

Development of a multimedia, teaching-at-a-distance courses requires numerous decisions about what content to feature, how to structure that content instructionally, how to use what media, how to provide learners with feedback on progress, etc. UMA is committed to a team approach to instructional development. Therefore, detailed responses to these questions cannot nor should not be made prior to the assembling of at least a part of the team charged with developing a given course.

Consequently, details about each of the eleven courses above are sparse. While these courses were identified during 1974, it cannot be declared that"advance planning" for each was accomplished during 1974. To be sure, some preliminary decisions have been made about some of the courses, particularly those which may be acquired and adapted during 1975. The work accomplished during 1974 is valuable primarily because it gives UMA a running start on advance planning and actual development during 1975.

It is quite possible that some of the courses identified as possible acquired courses will, after more investigation, prove unacceptable. It may also be that budget realities during 1975 will preclude accomplishment of the work suggested above. Whatever constraints prevail, however, UMA has identified a number of options from which it can select for attention in 1975.

CHAPTER XII
FORMATIVE AND SUMMATIVE EVALUATION

WORK ASSIGNMENT #12

> Formulate a working plan for the formative and summative evaluation of both the open learning courseware and the delivery system.

Central to the experimental nature of UMA is a thoughtful plan for conducting research and evaluation studies related to both the courseware UMA produces, and the delivery systems which make those courses actually available to learners.

In a growing organization such as UMA, new problems continuously arise, new topics need to be explored, and new evaluation responsibilities present themselves almost daily. Those who engage in research and evaluation must be sensitive to the changing nature of UMA. Indeed, research and evaluation should be directed toward continuously upgrading the quality of conceptual and practical knowledge about open learning, adult learners, delivery systems, curriculum development and other topics relevant to the UMA mission.

This chapter includes a summary of plans for conducting these research and evaluation activities within and about UMA. The work assignment specifically mentions formative and summative evaluation. Formative evaluation activities are aimed at gathering data useful to designers, producers, and delivery system personnel as materials are being developed and delivered, with an eye toward improving that development; hence the term formative. Summative evaluation is directed at obtaining data useful in understanding a more complete phenomenon. Summative evaluation does not try to provide data to people for the purpose of making changes in what they are now doing, but is rather directed at describing and judging the worth of a phenomenon at some temporary or permanent completion time. Both of these kinds of evaluation are included in the broad plan outlined below.

The chapter contains four sections. The first section summarizes the major outcomes resulting from work done during 1974 on this assignment. The second section includes some general observations on research and evaluation. The third section outlines a broad plan for the conduct of evaluation activities, including evaluation during course development, evaluation of operational courses, evaluation of delivery systems, and evaluation of UMA as a total entity. The fourth section contains suggestions for research topics for UMA. An added feature of this chapter is a series of reference notes designed to clarify specific points in the chapter. These notes are found at the end of the chapter.

The actual plan for evaluating any given course will depend on the nature of the course, and on the specific information needs of course developers. Chapter X contains a description of the formative evaluation procedures used with the first two UMA courses. This chapter is directed at the broader questions of research and evaluation in UMA.

SUMMARY OF MAJOR OUTCOMES

- A broad plan for evaluation activities within UMA was developed, including both formative and summative evaluation of courseware and delivery systems.
- Formative evaluation was conducted on the two UMA courses developed and delivered during 1974 (See Chapter X).
- Parameters for a broad five-year research plan for UMA have been established.

GENERAL OBSERVATIONS ON RESEARCH AND EVALUATION

Research and evaluation, within the context of a major development effort such as UMA, must be an integral part of the workings of the program. However, those engaged in research and evaluation must at times stand back from the day-to-day activities of the program, for the purpose of exploring the broader issues which surround the organization. The tension that exists between full immersion and dispassionate inquiry can be made to work for the good of the organization.

It should be clear that research and evaluation is necessary to the work of course designers, producers, content specialists, delivery system personnel and others associated directly with the design and implementation of UMA courses. Data must be collected about student achievement and interest, as well as about the process of designing, producing/acquiring, and delivering courses.

It should be equally clear, however, that UMA is more than designing and producing courses. UMA is an emerging university with the potential and problems associated with institutions of higher learning. Research and evaluation activities should help to recognize the broad context within which this new institution will operate; research and evaluation should help UMA to see itself as others see it.

It is also important to note the difference between research and evaluation. Evaluation tends to be directed at the needs of decision makers for information concerning developmental and operational decisions. As such, evaluation is a here-and-now phenomenon, an activity that worries less about generalizability than it does about immediacy and relevancy. Research, on the other hand, is directed more at the derivation of general principles and guidelines for further action. It has been said that evaluation is decision-oriented, while research is conclusion-oriented. The lines of demarcation between research and evaluation are not always obvious; however, it should be recognized that evaluation tends to serve different purposes than research.

Because UMA is a major experiment in American postsecondary education, there are a variety of unanswered questions at this point. Little is known about the social and cultural impact of providing greater access to educational opportunity. The effects of alternative delivery systems have not been measured. We do not know much about the characteristics of the population we are supposed to serve--their expectations motivations, capacities. Finally, we cannot predict what will happen to traditional educational programs once UMA and its state delivery systems are fully operational.

Few innovations in postsecondary education have been systematically studied. The nature of these experiments has, in most instances, precluded a careful study of development or impact. One of the things that will make UMA stand apart (in addition to its inherent structure) will be a careful and thoughtful attempt to document, probe, and understand the very nature and workings of this particular social innovation. It is to that end that UMA should seek to define early its priorities and major tasks within research and evaluation.

EVALUATION

There are four broad arenas within which evaluation activities occur in the UMA structure. Each is briefly described in the following paragraphs.

Evaluation During Course Development

One of the most obvious roles for evaluation within UMA is to provide support to course development efforts. This will be no small undertaking, particularly as UMA continues to expand the number of courses under development.

There are at least five evaluation activities occurring within the course development process. The first activity might be labelled needs assessment.[1] This critical activity involves understanding what kinds of needs a particular course could address or, more importantly, what kinds of needs exist within the adult learner population that ought to be met by some kind of general, professional or continuing educational experience. Needs assessment is regarded as encompassing the classical discrepancy notions of needs. It also encompasses desires of the learner population. It is possible for someone to need something, but not desire it. It is equally possible for someone to desire something that he or she may not necessarily need. Evaluation seeks to describe and define these needs and desires as clearly and accurately as possible. Some UMA courses will originate from a general academic sense of the need for a certain subject matter or skill to be in the repertoire of an educated person. In addition, UMA should be sensitive enough to respond to contemporary needs as expressed through the rhetoric or actions of the communities it is serving.[2]

A second evaluation activity follows from the first: having determined needs, it is useful to define goals. Evaluation plays an important part in the goal-setting function. As in most other social programs, UMA resources are limited. It is impossible to accomplish everything that might or should be done. Choices must be made. Goals generally represent intentions--intentions which are considered most important to and for the clientele being served, as well as to the society in which those clients function. Evaluation seeks to sharpen goals, not necessarily in the sense of requiring them to be finely stated, but rather in the sense of enabling UMA's developers and clients to better understand these goals and their relative merits. Goal-setting is a task that must be undertaken by all those working in the UMA program.

A third evaluation activity asks the question: "Do people learn anything from UMA courses?" The question of *achievement* is obviously an important one, and UMA evaluation efforts must attend carefully and thoroughly to this issue. Within the course development process there should be indicators of the extent to which learners are achieving UMA course goals. If, as the developmental process moves along, it becomes obvious that learners are not learning, or are learning material which interferes with the acquisition of the intended skills or content, then changes in the philosophy and/or format of the course may be in order. It is inadvisable to wait until the course is completely finished before any achievement indicators are obtained.

It is important to recognize which achievement measures can be obtained and used as part of the developmental process. Because of the time contraints within which course development must occur at UMA, significant field testing will not begin until students are actually enrolled in the course. While gross indicators of a program's success can be obtained during the developmental phase prior to learner enrollment, these data are necessarily limited. The first real examination of learner achievement will occur during the initial offerings of the course. Developers can use these achievement data to asses the need for periodic course revisions.

Another important aspect of evaluation during course development consists of obtaining measures of learner attitude, or the appeal level of the courses. Is there some balance to be achieved between appeal and substance, or is one a requisite to the other? Although one cannot be certain what that balance ought to be, it would seem reasonable to argue that courses which have no or little appeal to learners will not consistently draw adequate enrollments, and will suffer from non-completion of those who do enroll. Therefore, it is important to acquire some general indicators of how well courses are being received from an affective or attitudinal point of view.

Finally, the potential impact of the components within a given course should be considered. UMA is presently employing six instructional components: study guide, text, television, audio tapes, newspaper, and recommended readings. It will be important to know how well each of these components is contributing to the total impact of the course. Again, during the developmental phases, only gross indicators of component effectiveness will be obtained. And, once again, more extensive work on component evaluation will need to take place during the initial offerings of the course.

Evaluation of Operational Courses

The previous section has included a description of some evaluation activities directly related to the course development process. A thorough evaluation must be undertaken once the initial development process has ended and a given course is fully operational.. Such an evaluation might be done from two perspectives. On the one hand, course evaluation might be conducted by the internal staff of UMA, for the purpose of continuously monitoring the effectiveness of all UMA courses. Alternatively, a course might be evaluated by an external, disinterested party, whose intention is to provide a generally objective evaluation of the course as a whole. In either case, there are a number of variables which should be addressed in an evaluation of any single course.

Achievement. One of the critical variables for course evaluation is student achievement. When a course is fully operational, are students achieving what was intended? And, perhaps equally important, what are students learning in addition to intended outcomes? Achievement testing might be diagnostic (to place learners within a given course), formative (to provide learners feedback about their progress) and summative (to certify how well students achieved in a given course).[3]

Attitudes/Acceptability. As stated earlier, it is important to understand how acceptable a course is to a learner. It is equally important to understand the effects of that course on his attitudinal or value structure. Further, and more difficult, the evaluation might seek to understand which aspects of a given course had an impact on the attitudes of learners, or on the acceptability of the course.

Learner profiles. A part of the evaluation of a course must be an attempt to profile the learners who enrolled. Who were they? Why did they take the course? What backgrounds did they come from? What expectations did they have for the course? To what extent were those expectations realized?[4]

Learner evaluation of a course. Learners must be given an opportunity to evaluate the course they have taken. Procedures must be developed whereby learners can comment on the content, format, delivery system and examination process. This information should provide useful feedback to decision makers at UMA as to future directions for course development.[5]

Attrition. While it is important to understand the achievement and expectations of the people who complete the course, it is equally important to know some things about those people who do not complete the course. Why did people drop out of the course? Are reasons for non-completion to be found in the course itself, or in forces not directly attributed to the course? How can these factors be understood for the improvement of future course offerings?[6]

Relationship to other courses. In the development of a curricular philosophy, UMA should seek to understand the logical and empirical relationships between UMA courses. Does a given course logically precede or follow some other course? Does the aggregate of UMA courses yield a desirable curriculum? To what extent should state delivery systems help to define the intended relationships between UMA courses?

Non-registered learners. UMA has the potential for reaching a population quite beyond those who officially enroll in its courses. How many people view the UMA television component? How many people read UMA-developed literature, without actually enrolling in courses? What are the characteristics of these people? Is it important to devise means for them to enroll in the courses?[7]

Course credibility. As with any other educational institution, UMA needs to be concerned about the credibility of its courses to other professionals and other institutions. Thus, it is reasonable to ask how credible a psychology course is to the psychology professions, or an accounting course to accountants. UMA's reputation will be made in part by word-of-mouth testimony among various professionals about the quality of UMA courses. Therefore, it is important to know how acceptable given courses are to those people who are particularly expert in the content of those courses.[8]

Course impact. One of the most difficult questions to address concerns the impact of a given course on learners, communities, and the culture at large. This is an abstract notion in some respects, but also an extremely critical one. Are the dynamics of a given community altered in any way by the enrollment of a number of people in a UMA courses? What is the impact of enrollment on a person's outlook toward himself, his community, and his society?[9]

Cost-effectiveness considerations. Of major importance to UMA is a consideration of course costs and effectiveness. Education is an expensive enterprise. We need to have some insight for what we are getting from our educational dollar. We need to know whether certain techniques are cost-effective. It should not necessarily be implied that the least expensive technique is, by definition, better; such could hardly be the case. But, it is reasonable to address some questions to the relationship of cost to effectiveness, and cost to benefit. Certainly those directly involved in UMA should worry about that question. Equally as certain is the fact that others, namely legislators, taxpayers, and other interested publics, will be asking those questions. (Note: See Chapter II for a more complete discussion of this issue.)

These, then, represent some of the concerns to be addressed in the evaluation of operational courses. The issues are complex, but issues which must be addressed and well-documented for the well-being of UMA.

Evaluation of Delivery Systems

One of the most interesting and important features of the UMA program is the delivery systems of UMA affiliates. The delivery systems must be carefully examined. For example, are courses and services being delivered in a manner that is accessible to a wide variety of people? Is the material being delivered in a manner that is both comprehensible and convenient to learners? There are a variety of questions to be raised about the delivery systems, questions which will be exceedingly important in assessing the impact of UMA. Some of the important aspects of the delivery system evaluation include the following:

Learning center operations. Learning center networks are an integral part of the delivery systems associated with UMA and, therefore, should be evaluated carefully. Learning centers will provide resources, in terms of counseling and tutoring help, print and nonprint materials, testing services, and a place for social interaction among learners and faculty. They may also be locations for achievement examinations, computer-assisted instruction, and other related instructional techniques. Questions about learning centers focus on such matters as accessibility, adequacy of resources, cost, use, and pleasantness of the surroundings.

Broadcast television and radio. The delivery systems for UMA courses may employ broadcast television or radio, or both. To a great extent, decisions to employ broadcast television or radio may depend upon existing facilities of a state or region within a state. Given the availability of television and radio facilities within a state, evaluation questions must address their desirable role and function within a course or program.

WATS line and telephone networks. Learners may have available to them a toll-free telephone line for contacting course faculty and administration. Do learners find the toll-free telephone line convenient for them, do they use it, for what purposes do they use it, and are they satisfied with the results? For what kinds of instruction are telephone networks available and effective?

Professional development. There are other aspects of delivery systems to be taken into consideration. For example, what is the role of on-campus faculty in course delivery? The operation of delivery systems should be studied as it affects course faculty and learning center staff. A host of other factors will undoubtedly arise as more courses and delivery systems become operational, and as UMA gains in experience.

Administrative support. It will also be important to evaluate the effectiveness and efficiency of administrative support related to implementing courses and providing services to students. Procedures for learner recruitment, the ease with which learners are able to register, the extent to which learners get accurate, timely and useful information about programs and courses, and the adequacy of the physical delivery system are significant factors to be considered in delivery system evaluation.

Evaluation of UMA

Evaluation of UMA as a whole is more than the aggregation of evaluations of its separate parts. Course evaluation and delivery system evaluation are not the same as an evaluation of UMA. There are a variety of issues and topics that might be included in an evaluation of the total UMA concept, a number of which follow:

One of the critical issues concerning UMA has to do with the extent to which the potential learner population is being reached. UMA is designed to open access to postsecondary education for a wide variety of people who have heretofore not taken advantage of such opportunities. Who exactly is being served by UMA? Is UMA reaching the populations it intends to reach?[10] Are the target populations of UMA sufficiently defined to guide UMA planners?

The general level of satisfaction of adult learners enrolled in all UMA courses also should be understood. Evaluation efforts must describe the extent to which the personal goals and expectations of learners are being met by the total UMA program. Variations may occur across individual courses, but it is important to come to some sense of the extent to which UMA as a total program meets the needs and expectations of learners.

Another important element which evaluation must focus upon is the extent and nature of UMA's impact on existing programs and institutions. It will be important to know how UMA and its delivery systems are fitting into the total education program within a given state or the region. This will not be an easy inquiry, particularly in the short run. Nonetheless, it is a critical inquiry that UMA should be called upon to address.

Earlier, mention was made of obtaining cost-effectiveness measures on individual courses. This applies also to UMA as a whole. The difficult problem associated with obtaining such data has to do with defining measures of effectiveness or quality. But, as also previously mentioned, UMA is going to need to produce evidence on the cost-effective nature of its operation. If UMA becomes inordinately expensive, in relationship to the benefits accrued, then UMA will likely not survive.[11]

Some sense of the perceived quality of UMA offerings, as viewed by multiple audiences must be obtained. Learners, other professionals, legislators, business people, community leaders, national leaders, and a host of other people have some interest in and opinions about the program. Perceived quality, as used here, means the quality that UMA is attributed to have, by whatever criteria these multiple audiences use to determine quality.

It is also important that some measure be taken of the added qualities or changed characteristics of learners that result from UMA courses. Are people who enroll in UMA courses more confident people? Are they more innovative, more sensitive, more knowledgeable? Do employers find people who have been in the UMA program to be better employees?

UMA has the opportunity and a responsibility to advance the state-of-the-art of instructional and delivery systems development. Research and evaluation activities should determine the extent of UMA's influence in this area, and make some effort to relate UMA's developmental philosophy with philosophies advanced by other developmental specialists.

UMA has undertaken to define some open learning goals, as reported in Chapter I. Evaluation of UMA must, at least in part, focus on the extent to which these goals have been accomplished. Evaluation activites should focus on the extent to which UMA practice meets UMA rhetoric: What is open about the open learning program of UMA?[12] While it is important to know the extent to which UMA achieves its own goals, it is equally important to understand the extent to which UMA achieves goals held for it by other people. In some sense, then, the evaluation of UMA as a whole will be "goal free": evaluation will focus on the extent to which UMA achieves high priority social or educational goals, quite apart from or in addition to the goals UMA has set for itself. Both goal based and goal free evaluation relate to the issue of the worth of the UMA enterprise.

A determination must be made of the extent to which UMA meets regional or local educational needs. This topic, of course, relates to many of the others already discussed, but it can be looked at separately. Some comprehensive survey of the total educational program of a region might be conducted and subsequently used to determine the extent to which UMA is accomplishing or addressing certain needs of that region not presently being met by other institutions.

Evaluation activities also may inquire as to what evolves out of UMA. UMA evolved out of a number of existing institutions and programs, including the Universities of Nebraska, Missouri, Kansas, Kansas State, and Iowa State. It will be interesting to see what things are spawned by the existence of UMA. This again is a question of the impact of UMA on subsequent educational programming.

Finally, one of the most interesting things the UMA evaluation ought to attempt to address is the question of major changes in perception of postsecondary education across a state or region. A baseline study of the perceptions of people toward postsecondary education would be important to this endeavor. As UMA grows and more people become involved, it will be important to determine the extent to which the whole sense and mood of people toward postsecondary education changes or fails to change. This requires a longitudinal study of some complexity, but it should be enormously interesting and useful in trying to understand the social innovation called UMA open learning.

Based on these general parameters for an evaluation of UMA as a whole, UMA during 1974 developed a preliminary plan for an external evaluation of UMA. That plan, contained in Appendix VIB, provides a more concrete rendering of possible steps to be taken in assessing UMA from an outside perspective.

These four arenas for evaluation activities in UMA represent the role and function of evaluation in UMA. There are, however, some other fascinating and important questions that might be asked about UMA and its rationale. These will be described in the next section of this chapter.

RESEARCH

Possible research areas within the UMA program have only begun to be thought through. Even with initial thinking, however, it is clear that there are a variety of areas of research that are both desperately needed and very intriguing. Among those areas are the following:

Much more research is needed on the concepts of open learning, delivery systems and external degrees. Extending greater access to postsecondary education through convenient and efficient delivery systems has certainly been one overriding rationale for open learning systems. Presumably, part of these postsecondary educational opportunities can be used for external degree programs. Does providing greater opportunity for access to postsecondary education in fact increase the numbers and kinds of people who will take advantage of it? Do those who normally would not obtain a degree through traditional programs actually take full advantage of an open learning program?

UMA provides opportunities for research into what might be called message design. There are many questions about the organization of content for delivery to a noncampus-based population. For example, questions about the use of authority figures in video presentations seem to be of critical importance. The sequencing of instructional events appears to be less than resolved. Of course, a great deal of research has been done in prose learning, cueing and other areas that are relevant to course development. This research must be carefully reviewed to understand its implications for course design and production. In addition, new research in the area must be advanced.

Clearly more research needs to be done on the use of the various media within the UMA program. We know very little to date as to the relative effectiveness or optimum use of various kinds of media to accomplish various kinds of ends. For example, does the television component of a given course present content which is essential to learner mastery or serve basically as a non-instructional motivator? Does the newspaper component provide an effective overview of a course or topic? Can computer-assisted instruction and computer-managed instruction be efficiently used with the UMA program?[13]

There is a great deal of research needed on the adult learner, the targeted population of UMA. Existing literature must be reviewed, again with an eye toward implications for course design, production, and delivery.[14] Research into the motivations and expectations of the adult learner, as well as the sociocultural and economic milieu within which adults operate, must be developed.

Research into the development and utilization of a system of qualitative indicators for UMA must begin. What will UMA come to define as quality? How can UMA develop a system of indicators that will allow monitoring, on a continuing basis, of the quality being generated within the UMA program? The whole body of research which goes under the rubric of social indicators is extremely relevant. UMA has an extraordinary opportunity to advance work in social indicators, particularly as they apply to educational endeavors.

Because of the nature of the UMA program, there is an excellent opportunity to conduct a variety of research on the processes of course development. UMA should move toward experimenting with alternative developmental schemes. It might be well, for example, to point out what emerges from a systematic, logical development scheme, as compared to the generation of a course by living and working in a given community, and letting that course emerge out of the hopes, fears and aspirations of a community.[15]

Similarly, there are some extraordinary opportunities to conduct research on evaluation processes. To what extent is evaluation information actually used by developers and producers? What is the best way to represent evaluation information actually used by developers and producers? What is the best way to represent evaluation information to insure its utility? How can multiple audiences be served through evaluation?[16]

Of absolutely critical importance is research on the social and cultural implications of the UMA program. Thorough and systematic inquiry into the social benefits and costs of the UMA program must be undertaken. If UMA fails to take an active role in research in these areas, then UMA will have been remiss in its responsibilities. What happens to a community when a higher proportion of the citizens of that community take advantage of the opportunity to engage in postsecondary education? Does the new enlightenment which presumably flows from that involvement change the political or social structure of a given community? Are people more literate civically?

Very much related to all of the above is research into the whole topic of creation of an innovation. How does innovation get started? What are the political, economic, and social constraints on the development of an innovation, and how are they overcome? How are the various power groups within a locale brought into the making of that innovation? What is lost in the process of creating an innovation?

Finally, there is an excellent opportunity within UMA to conduct research on alternative means of managing an educational system such as UMA. The management problems faced by the UMA program are significant and complex. It would be unfortunate if careful examination of management problems is not made.

SUMMARY

Plans have been laid and basic criteria identified for the formative and summative evaluation of courseware, the evaluation of UMA's affiliated statewide delivery system, and an exhaustive evaluation of the UMA system as a whole. The office of research and evaluation is also developing a broad agenda of research projects to be undertaken during the five-year period. The products of this research are expected to impinge heavily upon evaluation concerns: for instance, research into the instructional roles of media in UMA courses should provide data useful to formative and summative evaluation of courseware. Thus, to a certain extent, UMA's evaluation plans will change and develop as more research and evaluation projects are undertaken, and new topics for investigation identified.

REFERENCE NOTES

1. During 1975 UMA will undertake a small number of experimental efforts to document the needs of communities in the Midwest. This undertaking should result in intensive case studies which describe community education needs.

2. The methods of preparing achievement tests for Accounting I and Introductory Psychology are discussed in Developing Student Achievement Measures (Appendix VIA). Indicators of the reliability and validity of the test instruments are also discussed, along with an interpretation of traditional indices for judging the trustworthiness of a measuring instrument.

3. Students who enrolled in the first two course offerings by SUN completed a Student Information Questionnaire (SIQ). The SIQ includes items from which a learner profile can be generated. The reasons given on the SIQ for enrollment with SUN are discussed in An Examination of the Goals of Potential and Actual Learners (Appendix I). During 1975 a detailed analysis will be made of SIQ data including relationships between learner characteristics, learner achievement, and course evaluations.

4. A detailed analysis will be undertaken during 1975 to draw tentative conclusions about learner evaluations of specific course components.

5. A comprehensive study will be undertaken during 1975 to assess reasons for non-completion of courses offered through SUN. Attention also will be given to learners who enroll in one SUN course offering but do not reenroll, and to potential learners who inquire about SUN course offerings but do not enroll.

6. The market surveys undertaken to date have not attempted to "poll" people who are not enrolled in UMA courses, but who might be reading the course newspaper component or watching the course television programs. Although it may be difficult to measure, the benefits derived by non-registered learners from the newspaper and television components could be considerable. In other words, the reading and viewing audience for UMA course materials may be considerably larger than those learners formally enrolled in UMA courses and, as such, should be identified.

7. Effective ways need to be found for sharing needs assessment and course evaluation data with content experts (academicians). One important reason for doing so is to bring the best thinking to bear on educational activities which are responsive to learner needs; a second reason is to insure that courses offered for credit meet high academic standards.

8. If changes occur in the expectations of learners as a result of taking one or more UMA courses, then it is important to trace the consequences for the individual, for his community, and for the society. As a part of the "goal free" evaluation activities of the UMA Office of Research and Evaluation, unanticipated consequences related to enrollment in UMA courses will be identified.

9. One of the important uses for market surveys is to provide empirical evidence of the potential learner population(s) for UMA. The early market surveys (1972-73) tended to generate gross indicators of who the potential market was, and the size of that market. It is expected that, with experience, future UMA market surveys will become more precise with respect to the characteristics of learners likely to enroll in an open larning program, the types of educational experiences which potential learners prefer, the scheduling of courses for active learner participation and the optimal cost of course materials and tuition.

10. A preliminary study will be designed during 1975 to identify and describe the costs of UMA compared with the costs of one of more postsecondary educational programs. It is planned that, over time, cost data will be linked to effectiveness and/or benefits data in order to compare the relative contribution of UMA courses. Whether or not such data can be effectively used by internal and external decision makers remains to be judged.

11. The concept of open learning is multidimensional. that is, there are numerous parameters for describing open learning programs. Any single program or institution could be open or closed in a variety of ways. One of the more complete lists of open learning parameters is given by the Working Group on Open Education (WGOE), The Ontario Educational Communications Authority (Final Report, Toronto, Ontario, January 1975, 42 pp.). The dimensions of open learning identified and discussed involve (pp. 14-17): social objectives; clientele; admission policies; needs and interests; pedagogical philosophy; delivery media; formats; feedforward/feedback mechanisms; assessment/accreditation; counseling/guidance; financing, system organization; and, research. According to the WGOE classification, a completely "open" learning system would have a broad range of goals, would be available to everyone who is interested and motivated, would exclude no one for a lack in their education or experience, would provide a range of program alternatives, would encourage a learner to become independent or self-directed, would offer a variety of media to deliver instruction, would be diverse and flexible in learning methods used within the instructional media, would incorporate both given support to the learner (feedforward) and providing evidence to the learner of change during the learning process (feedback), would not make the learner's progress contingent upon formal accreditation, would provide both direct and indirect guidance and counseling for learners when needed or requested, would be free or inexpensive for the learner, would tolerate and encourage learner participation in program administration and decision making, would identify existing and potential clients, as well as the effectiveness and potential effectiveness of the program(s). The WGOE is quick to add: "...That not all of these features are present, nor should they necessarily be, in any one program or institution...(p. 17)". Where does UMA stand on the dimensions of open learning?

12. The Control Data Corporation (CDC) is cooperating with UMA to investigate the possibilities of the PLATO System for both computer-assisted and computer-managed instruction with UMA.

13. During 1975 a comprehensive review of the literature on adult learning will be initiated. The review of adult learning research will focus on "principles" which can be tested in the design and development of UMA courses, as well as in the tutoring/counseling/advising of learners. A specific proposal will be generated to test materials, developed from theoretical propositions about adult learners and learning, with a segment of the adult population.

14. Based on the initial case studies of a small number of communities in the Midwest, an effort will be made to encourage one or more communities to initiate their own "learning center" and educational activities. The intention is to provide support resources such that the community can develop at least one course on their own.

15. One example of the multiple audiences potentially served through evaluation data is that involving needs assessment. Both internal and external audiences may consider needs assessment data generated through market surveys and community studies as critical to their deliberations and decisions. Another example involves cost-effectiveness data, which internal and external audiences may find useful for comparisons both within and between programs. Methodologies for sharing such evaluative data, and assessing its impact, must be investigated.

LIST OF REFERENCES

Chicago TV College. A Fifth Report. Chicago, 1974.

Commission on Non-Traditional Study. Diversity by Design. Jossey-Bass, 1973.

Newman, Frank (Ed.). Report on Higher Education. U.S. Department of Health, Education, and Welfare, 1971.

APPENDIX I

AN EXAMINATION OF GOALS OF POTENTIAL AND ACTUAL SUN LEARNERS

TABLE OF CONTENTS

Page

INTRODUCTION 1

THE INITIAL MARKET SURVEYS 2

THE 1974 MARKET SURVEY 9
  Demographic Information 10
    Summary 17
  What People Want to Learn 18
    Summary 27
  How People Want to Learn 28
    Summary 33
  Educational Plans 34
    Summary 37
  Summary of the 1974 Market Survey 37

STUDENT INFORMATION QUESTIONNAIRE 39
  Ratings of Goals 41
  The Most Important Goal 42
  Degree Goals 47
  Summary of Student Goals 48

SYNTHESIS OF THE FINDINGS OF UMA AND OTHERS 50
  Who Desires Postsecondary Education? 50
  What Are the Goals of Adult Learners? 51
  What About Credit? 53
  Deterrents to Continuing Education 54
  Educational Methods 55
  Discussion of Market Surveys 55
  Recommendations for Future Surveys 57
  Summary 60

REFERENCES 61

APPENDIX A 1974 MARKET SURVEY FORMS 1, 2, and 3 63

APPENDIX B Student Information Questionnaire 68

LIST OF TABLES

Table		Page
1	Course Preferences of High School Students and Adults	4
2	Reasons for taking a SUN-like course, by respondents "very Likely" to participate in such a course	5
3	Preferences for types of courses potentially offered through SUN-like educational program	7
4	Reasons for wanting to take college courses	7
5	Age distributions of the responding sample, SUN's present learners, and the adult population of Nebraska	11
6	Distribution of sexes in the responding sample, and in SUN's present learner population	13
7	Distribution of Educational levels of the responding sample, SUN's present learner population, and the Adult (over 25) population of Nebraska	13
8	Number of years since respondents participated in college level courses	14
9	Distributions of respondents, present SUN learners, and Nebraska residents among various sized population centers	16
10	Marital and Family Status of respondents and present SUN Learners	16
11	Major reasons for participating in an educational activity	19
12	Relative importance of various areas of study	20
13	Preference for College and/or Credit Courses	21
14	Preference for credit or non-credit college level courses	22
15	Preference for credit or non-credit college level courses, by age group	22
16	Interest in practical over theoretical courses	23
17	Interest in skill development emphasis or knowledge emphasis	23
18	Relative appeal of various academic areas	25
19	Relative importance of various practical topics	26

Table Page

20 Ratings of various locations for educational experience 29

21 Responses to the question "How Do You Feel You Learn Best?" 31

22 Relative suitability of various educational means 32

23 Average rankings of various learning sources 33

24 Likelihood of participation in academic course work in the next five years 35

25 Factors preventing participation 36

26 Current activities which new educational activities would have to supplant 37

27 Goal statements listed in the order of the average importance ascribed to them by SUN learners 43

28 Distribution of selections of each goal statement within the Career Improvement clusters as being Most important 45

29 Distribution of selections of each goal statement within the Academic Self Concept Improvement Cluster as being most important 46

30 Distribution of selections of each goal statement within the Cultural Growth and Development cluster as being most important 47

31 Academic (Degree) Goals of a sample of SUN learners 48

AN EXAMINATION OF GOALS
OF POTENTIAL AND ACTUAL
LEARNERS:
University of Mid-America/State University of Nebraska

Introduction

One of the major responsibilities given to SUN (State University of Nebraska) during 1974 was to

> complete the planning of a two-year postsecondary open learning curriculum to be offered, including enumeration of courses in order of priority of development, establish a procedure for the study of student goals and objectives, develop a plan for the awarding of a certificate of achievement, and develop a plan for a credit by examination program.

From this rather extensive work assignment, the SUN Office of Research and Evaluation was directed to look most closely at the issue of student or learner goals. A broad set of open learning goals had been developed by the University of Mid-America (UMA) and State University of Nebraska professional staff, with assistance of the UMA Academic Council. It is, however, also reasonable to ask: what do the people want? What programs should SUN feature if it is going to be responsive to the goals, interests and expectations of the proposed clientele? One of the reasons in asking these questions was to determine the congruence (or lack of it) between the intentions of the SUN program developers, and the intentions and desires of the people for whom the program was established.

At the beginning, no one could really be sure who would enroll in a SUN course. For purposes of course development, some assumptions had to be made about the characteristics of these potential learners. Thus, while no specific data existed on the goals or characteristics of SUN learners, the literature in adult education, as well as the experiences of other similar programs, provided some clues as to adult learner characteristics. But there was clearly a need for more and better information about the characteristics and interests of UMA/SUN clientele.

So what are the goals of adult learners in the UMA region? The answer to this question is, in all likelihood, not static. Goals change. People change. For example, we cannot say with certainty that learners who enroll in Accounting I the second time it is offered will be the same kinds of learners who enrolled for the first offering. In addition, the goals of a given learner may change as he or she gains experience in a SUN course.

A number of activities have been conducted by UMA/SUN in an effort to obtain some insight into the goals held by potential and actual SUN learners. During 1971-1973, three market surveys were conducted for SUN. These market surveys have been reported in the 1973 SUN Final Report to the National Institute of Education, and may be reviewed in their entirety in that document. The highlights of those market surveys, as they relate to student goals, are reviewed below.

Another market survey was initiated by the Office of Research and Evaluation, on a pilot basis, during 1974. The results of that survey, while recognizably limited in meaning at this point, are also reviewed in this chapter.

Finally, a Learner Characteristics Study is underway on those learners actually enrolled in the present SUN courses. The results of that study which are available at the time of this writing are reviewed in this chapter.

The Initial Market Surveys

The market surveys conducted prior to 1974 produced some interesting information as to what adults felt they would like from postsecondary education and, indeed, what some of their goals or ambitions were. Brown[1], for example, reported the results of one study designed to portray characteristics of *potential* students for a multi-media off-campus approach to college education. Phone surveys, mailed questionnaires, and personal questionnaires were used to gather information from high school juniors and seniors, as well as adults, throughout Nebraska. That study indicated a substantial percentage of those high school students (69%) and those adults (68%) surveyed felt that someone could learn as much in a multi-media approach as in a regular classroom. Better than 90% of both groups said they would recommend an open learning program to people they knew who might be capable of handling college work. When asked if someone in their immediate family might be interested in taking a course available through a program like SUN, 47% of the high school students, and 15% of the adults, gave an affirmative response.

The Brown study yielded other data on the interest of potential students in taking a SUN course, and also provided some data on what kinds of courses might be of interest. Table 1 summarizes these responses. While the category "others" was chosen most often, Accounting and Psychology appeared near the top of the list. These findings served as the basis for initial course selections for UMA/SUN.

Table 1. Course Preferences of High School Students and Adults*

	High School Students		General Adults	
	1st Choice	2nd Choice	1st Choice	2nd Choice
Art	14%	10%	8%	5%
Accounting	17%	15%	24%	13%
Biology	14%	12%	5%	4%
Philosophy	3%	7%	3%	6%
Physiology	3%	6%	--	9%
Psychology	16%	16%	16%	20%
Sociology	7%	19%	8%	23%
Others	26%	15%	37%	20%

*From: Brown, Robert D. "An Open University for the Midlands: Why and For Whom?" Research in Higher Education, Vol. 2, 1974.

A second market survey was conducted, using a mail questionnaire in each of six geographic areas of the country (Nebraska, Iowa, Kansas, Missouri, Baltimore, and Portland). The sample included homemakers, husbands and children. Respondents were asked to consider their possible involvement in three different kinds of educational programs (adult education, college correspondence and SUN).

Approximately 1.4 - 1.7% of the people in this sample indicated they were very interested in a SUN-type educational program and 11 to 12% indicated a similar degree of interest in general adult education. Above average interest in participating in a SUN-like program was expressed mostly by people living in towns containing 2500 - 49,000 people, people who have taken some other study programs, people who are employed part time, and women ages 40-49.

About half of those people who expressed an interest in the SUN-type program wanted to participate for college credit. While the idea of easier learning and freedom from college campus involvement were reflected in "likes" about the program, "dislikes" indicated some wariness on the part of respondents in terms of their capabilities of handling a home study program.

Respondents were asked to indicate why they would take courses through one of the kinds of programs mentioned above. Table 2 indicates reasons for taking

SUN-like courses as given by respondents "very likely" to participate in a SUN-like course. The data indicate the primary reason for taking a SUN course is to receive college credit. Personal fulfillment and obtaining general knowledge were also cited, as was job advancement.

A third market survey was conducted in five cities in the Midwest (Omaha, Madison, Colorado Springs, Fort Wayne and Peoria), using an interview technique. A total of 1,230 interviews were conducted with adult residents in these cities. The interviews focused both on general attitudes toward education and schooling, and specific attitudes toward a SUN-like educational program.

When asked about the relative importance of improving their education, considered in comparison to items such as putting money aside for retirement, traveling, moving to a new house, buying a new car, etc., 21% of the respondents rated improving their education as most important. Only putting aside money for retirement was rated by a larger percentage (25%) of people as being most important. The study reports that the largest proportion (60% or more) selecting "improve my education" as an important personal goal are found among residents of Madison, young people under 40 years of age, and those who have attended college for one or more years.

Table 2. Reasons for taking a SUN-like course, by respondents "very likely" to participate in such a course (N=56)*

Reason	Percent of sample selecting reason
Job Advancements	29%
Home Management	5%
College Credit	54%
General Knowledge	30%
Personal Fulfillment	32%

*From Flinn, Gorden. SUN Study, February 1973.

Two other questions included in this third market survey are of particular interest to a discussion of student goals. All respondents were given a list of courses that might be offered through a SUN-like program, and were asked to indicate which of these courses they would most like to take. Table 3 depicts percentage of respondents indicating an interest in each of the options.

As part of the market survey, the researchers identified, from the total survey sample, a group of people who appeared to be the most likely people to actually take advantage of a SUN-like program, should that program be available. The group was arrived at through a series of "filter" questions, designed to distinguish between general interest and a high level of interest in participating. A total of 97 respondents, or 8% of the total survey sample, was selected as a target group. Table 3 also indicates the responses of this target group to the question of which courses they would like to take. While actual percentages differ somewhat between the target group and the total sample, the rank order of courses appears to be very similar.

Respondents were also asked about their reasons for taking college courses. Each respondent was given a list of possible reasons, and asked to indicate which of those reasons applied in their particular case. Table 4 contains the results for both the total sample, and the target group. Again, there was considerable agreement between the groups. Both groups stated "to improve their mind generally," or "to grow in knowledge and understanding of the world they live in," as being most important. Qualifying for a better job, or working toward a college degree, while both considered important by a significant proportion of the sample, were not stated as being as important as the other reasons given above.

Table 3. Preferences for types of courses potentially offered through SUN-like educational program.*

Course	Target Group (N=97)	Survey Sample (N=1250)
Psychology	48%	22%
Mathematics	40%	19%
Art	37%	18%
Accounting	36%	19%
English	33%	18%
Sociology	33%	15%
History	27%	16%
Teaching methods	27%	14%
Music appreciation	24%	14%
Philosophy	22%	10%
Physiology	15%	6%
Biology	8%	6%
Don't know, nothing on the list		3%
Not asked - not interested in program		39%

*From Central Surveys, Inc., _A Public Opinion Survey Conducted in Five Midwest Markets for State University of Nebraska_, 1973.

. . . .

Table 4. Reasons for wanting to take college courses.*

Reason	Target Group (N=97)	Survey Sample (N=1250)
To improve my mind generally	67%	37%
To help me grow in knowledge and understanding of the world we live in	61%	30%
To have a new and interesting activity and use my spare time effectively	33%	24%
To help me qualify for a better job	32%	17%
To work toward a college degree	25%	11%
To help me do better in my present job	22%	12%
To help me get a job	7%	7%
To get a high school diploma	6%	5%
Don't know, no opinion	--	1%
Not asked - not interested in the program	--	39%

*From Central Surveys, Inc., _A Public Opinion Survey Conducted in Five Midwest Markets for State University of Nebraska_, 1973.

The three market surveys, then, corroborated each other in some ways, and pointed out some potential discrepancies in other areas. The surveys were in agreement that there is a potential audience for a SUN-like program, although the actual size of that audience, and of its actual participation, could not be determined with much accuracy at this time. Most people are interested in learning to improve their own minds, without worrying too much about pursuing a college degree. At the same time, however, most of the 1.4 - 1.7% of the respondents interested in SUN courses indicated a desire to obtain college credit for their work. There appears to be some basic agreement among the surveys about what courses people would like to take. The data bear out the choice of Accounting I and Introductory Psychology as reasonable places for UMA/SUN to begin course development efforts.

What is not clear from these three market surveys, however, is what people meant when they said they wanted Accounting, or Psychology, or some of the other traditional course areas included in the surveys. Neither is there much insight into the importance of those academic courses relative to non-academic kinds of educational experiences, such as a course in investing, or gardening.

Thus, while the surveys produced information of considerable use, it was decided to extend the information base of UMA/SUN with respect to student goals by developing a new market survey, which would build on the experience of the past surveys, and would ask some new questions. The results of that effort are described in the next section of this chapter.

THE 1974 MARKET SURVEY

In an effort to provide greater clarity to questions of potential learner goals and needs provided by previous surveys, a small pilot market survey was conducted by UMA/SUN during 1974. Three small instruments (see Appendix A) were developed. A sample (N=1600) of adults was randomly drawn from telephone books throughout Nebraska, approximating the geographic distribution of population of the state. One of the three forms was sent to each of the potential respondents. Each form contained different questions, except for a few questions requesting certain demographic data from all respondents.

Of the 1600 forms sent, 92 were returned as undeliverable. A total of 156 forms, or about 10% of the deliverable forms, was returned. The results obtained from this pilot study must thus be considered with appropriate tenuousness. The results are certainly more suggestive than definitive.

The following report is divided into four major sections, plus a summary. The first section compares the survey sample to SUN's present learner population, and to the adult population of Nebraska, in terms of the demographic information requested on the first third of each form. These comparisons are presented both as an indication of the adequacy of the sampling procedure, as well as an indication of the relative interest in continuing education of various sub-groups of the population.

The second section focuses upon what people say they want to learn. Included in this section are stated reasons for learning, and types of courses desired.

The third section concerns how the respondents say they want to learn, and summarizes responses to questions about location, independence and media.

The fourth brief section reports the educational plans of the respondents, and the difficulties they expect to have to overcome to carry out these plans.

Demographic Information

Demographic information (common to all three versions of the form) actually serves two purposes. The first is to provide some idea of the nature of the sample of the population that chose to return the form, particularly in comparison with the available census data for Nebraska. This comparison may be useful in identifying some of the sampling biases present, which ought to be taken into account in the interpretation of the data.

The second purpose is to indicate interest in education among various parts of the population. Certainly the return of an opinionnaire is in no way a definitive indicator of a respondent's interest in the subject of that opinionnaire. However, if a disproportionately large or small segment of a population returns a randomly distributed opinionnaire on educational opportunities, the possibility that the biased return is due to varying degrees of interest should at least be considered.

Distribution of Ages. Table 5 shows the age distribution of the responding sample, that of SUN's present group of student learners and that of the total adult (over the age of 19) population of Nebraska. Note that in all tables in this report, figures are rounded to the nearest percent. The table indicates, with respect to the general adult population in the state, a disproportionately high percentage of returns was received from the 35-49 age group (40%, as compared with 26%), and a disproportionately low percentage of questionnaires was returned by the over 64 age group. We can't be absolutely sure of the reason for this bias, but there are a number of possibilities.

The first might be due to an uneven distribution of the 1600 forms. This would be the case to the extent that the middle-aged group would be more likely to have their names in the phone directory, and the senior-citizen less likely. This is a reasonable expectation in the case of the latter, with older parents living with their children or in institutions, but doesn't seem to be an altogether satisfactory explanation for the relatively high returns of the former.

Table 5. Age distributions of the responding sample, SUN's present learners, and the adult population of Nebraska.

Age	Percent of Responding Sample (N=156)	Percent of SUN's Present learners** (N=600+)	Percent of Adult* Pop. of Nebraska
Under 20	1%	2%	--
20-34	34%	36%	31%
35-49	40%	40%	26%
50-64	18%	19%	23%
Over 64	6%	3%	20%

*Adult population here refers to all persons over age 19. Source: Nebraska Blue Book, 1972. Compiled by the Nebraska Legislative Council.

**These learners are taking one of SUN's first two courses. The course offerings were advertised through radio, television and newspapers in Nebraska.

The disproportionality of the returns from the middle-aged group could be related to having more time to answer such forms, or a greater inclination of this age group to answer such forms, or to any number of other factors. However, we have no data to support or reject such hypotheses.

Yet another hypothesis that might be considered is that the 35-49 age group is simply more interested in alternative forms of higher education, and for this reason more of that group took the time and effort to fill out and return the forms. There is some support for this hypothesis in that the distribution of ages in SUN's present group of learners very closely approximates the responding sample. Furthermore, it makes sense to suppose many older people feel no need to, or are unable to start studying again, while many younger people have been out of school for too short of a time, or are too busy with a new family or career to want to continue their education.

Speculation about possible reasons for a higher level of interest in continuing education among this age group could also include their response to a sort of emotional and vocational plateau. With children raised, and with jobs having become secure and often routine, it is reasonable such persons would have a desire to search for new goals and opportunities, new ways of making their lives meaningful.

Sex-related Sampling Bias. Table 6 illustrates a more critical bias of the returns. It shows that approximately 70% of the respondents were male, and 30% female. While this bias is in the direction expected with sampling being done from the phone book, it is interesting to note that the distribution of sexes is approximately opposite of SUN's initial group of learners, of which about 80% are female. There are relatively few married women who choose to have their names listed in the phone book. Thus, a significant proportion of listings of women are for relatively young women, or widows. On the other hand, over half of SUN's present female enrollees are homemakers. Consequently, some caution must be observed in generalizing from the response of women in this survey. To the extent these groups of women may differ in their goals, the responses to this market survey could be misleading if taken to represent SUN women enrollees. This point needs to be explored further.

Table 6. Distribution of sexes in the responding sample, and in SUN's present learner population.

Sex	% of Responding Sample (N=156)	% of SUN's Present learners (N=600+)
Male	70	21
Female	30	79

Educational Achievement. Table 7 compares the level of education of the responding sample with SUN's present learner population, and the adult (over 25) population of Nebraska. The table indicates 41% of the adults in Nebraska have not completed high school, substantially higher than the percentage (5%) of our responding sample.

Table 7. Distribution of Educational levels of the responding sample, SUN's present learner population, and the Adult (over 25) population of Nebraska.

Education	% of Responding Sample (N=156)	% of SUN's Present Learners	% of Nebraska's* Adult Population
Eleventh grade or less	5%	5%	41%
Trade, Business School	10%	14%	
High School	21%	43%	59%
1-3 years of College	26%	27%	
College Graduate	19%	6%	
Graduate Degree	19%	4%	

*Adult here refers to all those 25 or older. The 59% figure refers to all those tho have had at least 4 years of high school. Source: Statistical Abstract of The United States, 1974, U.S. Department of Commerce.

Table 8 lists the responses of the market survey sample to the question "How many years has it been since you last participated in a college-level education experience?" It can be seen that 17% of the respondents have had no educational experiences they consider college level, 31% have had such experiences over five years ago, while the remaining 52% have had some college level experience in the last five years.

Table 8. Number of years since respondents participated in college level courses.

Number of years	% of Responding Sample (N=153)
Have not participated	17%
Within last year	19%
1-2 years ago	8%
3-5 years ago	25%
More than 5 years ago	31%

Though there are no comparable figures for either the state or UMA/SUN's present population on this specific question, these data do appear to reflect the information presented in Table 7. The responding sample is more positively oriented to continuing education than one would expect from a random sample of the total Nebraska population.

Though some arguments could be made that the phone book is biased in the direction of the more highly educated, it is doubtful such a bias could account for the observed discrepancy between our sample data and the census data. Again, a more likely explanation might be a greater willingness to participate in such a survey among the more educated, or a higher interest in continuing education. The similarity of the responding sample to SUN's present learner population, in terms of educational achievement, gives this hypothesis some credence.

If it is, in fact, true that it is the more highly educated that are interested in continuing their education, SUN must give some thought to the question of whether this is an indication of the nature of continuing education, a nature that must be modified if it is to attract a heretofore unserved audience or, if it is an indication of the nature of the unserved audience, that it is unaware of the advantages SUN has to offer, or of SUN itself.

Admittedly, there is only limited information here to warrant even tenuous hypotheses, much less firm conclusions. It would be a mistake to consider the above interpretations as anything but food for thought. But food for thought it is.

Distribution in terms of size of town. Table 9 illustrates the distribution of the population in rural areas, small, medium and large towns and in cities. The figures are given for Nebraska, for SUN's present group of learners (a self-selected group obviously interested in education), and for the respondents to the Market Survey of the general Nebraska population. The table shows our responding sample consists of a higher percentage of city dwellers than one would expect from a random sample of the state population. The most likely explanation for this would seem to be that there are probably more telephone listings per person in a large city, than in the state in general, due to the higher percentage of single persons that are likely to be present in a city.

It is interesting to note, however, that SUN's present population very closely approximates the population of the state in general, in terms of its distribution among various sized population areas.

Table 9. Distributions of respondents, present SUN learners, and Nebraska residents among various sized population centers.

Population of Area of Residence	% of Responding Sample	% of Present SUN Learners	% of Nebraska's Population*
Rural/Farm	14%	22%	22%
Small Town (2,000 or less)	17%	18%	15%
Medium Town (2,000-10,000)	14%	15%	13%
Larger Town (10,000-20,000)	2%	10%	11%
City (over 20,000)	53%	36%	35%

*Source: Nebraska Blue Book, 1972. Compiled by the Nebraska Legislative Council.

Marital and Family Status. Table 10 compares the marital and family status of the responding sample with that of the present population of SUN learners who returned their Student Information Questionnaires (about 60%, or 367 were return). It appears the respondents to the Market Survey were rather similar to UMA/SUN's present learner population in terms of family and marital status.

Table 10. Marital and Family Status of respondents and present SUN learners.

Marital and Family Status	% of Responding Sample	% of SUN's Learner Population*
Single	11%	11%
Married, no children	11%	13%
Married, mostly young children	37%	31%
Married, mostly grown children	31%	39%
Widowed, divorced or separated	9%	6%

*These figures are based on the data from the Student Information Questionnaires, which were returned by 60% (367) of SUN's learners.

Summary of the Demographic Information. Information on Age, Sex, Education, Size of Town and Marital and Family status of the 156 respondents to SUN's 1974 Market Survey was tabulated and compared to similar information on SUN's present learners, and on the total Nebraska Adult Population. These comparisons were made both to assess the adequacy of the sampling technique, and to assess relative level of interest in continuing education among various demographically defined groups.

The most obvious sampling bias was the predominance of males (70%) in the responding sample, due primarily to the technique of using the phone book to provide names. This is compared to the predominance of females (79%) among SUN's enrolled learners.

The responding sample parallels SUN's present learners in terms of age, but contains a higher proportion of middle-aged persons than is present in Nebraska's adult population.

The survey sample also parallels SUN's present learner population in terms of educational level achieved, with 95% having had at least four years of high school, as opposed to only 59% of the state's adults.

The marital and family status of the survey sample also is very similar to SUN's present learners, though most of the married persons in the sample are men, while most of the married persons taking SUN courses are women.

Finally, the sample seems to slightly over-represent the big cities, with 53% coming from cities of 20,000 or more, as opposed to 36% of SUN's present learners, and 35% of the state's population, living in cities of that size.

These figures indicate the data reported from this survey must be interpreted with caution. They reflect the opinions of about 1 hundredth of of 1 percent of Nebraska's population, including a disproportionate number of males, educated persons, and middle-aged persons. The respondents clearly do not represent a purely random sample of Nebraska adults. However the extent that these are the type of adults SUN wants to serve, the data will tend to be valid. If SUN is interested in serving a subgroup of the population that failed to respond to this survey or is not enrolled in a SUN course, e.g., the relatively uneducated, other means must be used to assess that subgroups needs and to facilitate their enrollment in SUN. Additionally, the question must be asked "Why were the relatively uneducated more reluctant to respond?" Is it because of lack of interest? Lack of knowledge of educational opportunities? Fear? Lack of confidence? Or, did they simply not receive the survey instrument? The question of why the less educated were not represented in these survey returns seems to be a question worth being answered, particularly as it relates to their interest in continuing education in general.

What People Want to Learn

The largest number of items on the market survey questionnaire was aimed at determining the kinds of things adults in the UMA/SUN area would like to learn. This question was addressed from various points of view--from the broad perspective of the purposes of respondents for studying, to more narrow questions of what kinds of courses they would like to take.

Reasons for Learning. The sample of persons (N=50) who responded to Form #1 were asked the question "If you were to participate in an educational activity, what major reasons would there be for you to do so? (Check all that apply)." Table 11 lists the alternatives in order of their frequency of choice.

Table 11. Major reasons for participating in an educational activity.

Reason	Percent of Responding Sample (N=50) Selecting Each Reason
To increase my general knowledge	70%
To prepare me for a job or career improvement	56%
To increase my current level of schooling	54%
To satisfy my curiosity about a particular topic	43%
To become a better person or citizen	29%
To become a better friend, spouse or parent	17%
To spend my leisure time in a worthwhile way	17%
To help me get more out of a hobby or interest	13%
To get to know other adults	5%
Total*	304%

*Total is more than 100% because each respondent chose an average of 3 items.

The most frequently chosen reasons for participating in an educational activity were perhaps the most traditional reasons, i.e., to learn more, to get ahead in a job, and to increase general level of schooling. Each of these was chosen by over half of the total sample. The next five most frequently chosen reasons were chosen by from 13% to 43% of the total sample of 50 persons. These five choices could be related to reasons of personal development or of general self improvement, as opposed to the possibly more typical academic goals.

The least frequently selected reason for participating in an educational activity was "To get to know other adults." Only 5% of the respondents chose this rather non-academic reason for continuing their education. It thus appears the lack of social contact may not be a serious deterent to continuing education in the home.

General Areas of Importance. A question on Form #2 asked "Which of the following areas would be most important to you if you were to take part in an educational activity (that is, lecture, course, educational television)?" Table 12 lists the alternatives in the order of frequency of choice.

Table 12. Relative importance of various areas of study

Area of Importance	Percent of Responding Sample (N=50)
Trade, business or vocational subjects	48%
Hobbies, recreation and leisure	32%
Regular school subjects	28%
Home improvement and family living	18%
Public affairs and citizenship	18%
Agricultural subjects	18%
Youth leadership work	12%
Community development	8%
Total*	182%

*Total percentage is over 100% because most respondents selected more than one area.

By far the most popular choice of this group of 50 respondents was for Trade, Business or Vocational Subjects, with almost half indicating that this type of course would be important to them. Regular School Subjects and Hobbies, Recreation and Leisure, were selected by 28% and 30% of the respondents respectively as being important. The greater popularity of the practical and the traditional suggested in Table 11 seems to be indicated in this table as well. That a third of this sample selected the leisure time area, however, suggests this is also an area to be given careful consideration.

Courses for College Credit? Questions relating to taking college-level courses were asked on Forms #2 and #3. Form #2 asked the question "In which of the following ways would you be most likely to continue your education?" Table 13 lists the three alternatives, and the percentage of selections made by this sample of 47 respondents.

Table 13. Preference for College and/or Credit Courses.

Method	Percent of Responding Sample (N=47)
Taking college courses for credit toward a degree	40%
Taking college courses, but not for credit toward a degree	21%
Taking non-credit courses not generally found in a college curriculum	38%
Total*	99%

*Total less than 100% due to rounding.

The distribution of responses in Table 13 shows that the College course for credit option and the non-college course for no credit option were each chosen by an equal proportion of the sample--about 40%. Only 20% of the sample felt they would be likely to continue their education with a college course for no credit toward a degree. It should be kept in mind, however, that a person's response to this item probably reflects not only his educational goals, but also his knowledge of what is currently offered. Had the respondents been aware of a great deal of college level courses offered for no-credit, more of them might have selected this option.

Form #3 also asked a question related to taking college courses for credit. It asked, "If you were to participate in a college-level educational activity, which of the following would be of most interest to you?" The responses to the credit/no-credit option qre listed in Table 14. Note the relative emphasis is similar to that indicated in Table 13, with over twice as many respondents indicating if they would take a college course, they would want to take it for credit.

Table 14. Preference for credit or non-credit college level courses.

		Percent of Responding Sample (N=53)
Credit		72%
Non-credit		28%
	Total	100%

Table 15 breaks down the credit/no-credit preference in terms of three age ranges. A clearly statistically significant relationship between age and credit option exists, with the younger persons preferring the credit option much more strongly than the older persons. There are a number of possible reasons for this relationship. One might be the fact that younger people are more educated in general, and feel more prepared to take a course for college credit. Another is that younger people may see a greater possibility of applying this credit to an eventual degree. Whatever the reason, the relationship clearly exists, and should be considered as UMA/SUN plans for the future.

Table 15. Preference for credit or non-credit college level courses, by age group.

Age Groups	Credit	Non-Credit	Total
20 - 34 (N=15)	100%	--	100%
35 - 49 (N=27)	65%	35%	100%
50 - 64 (N=11)	25%	75%	100%

$X^2 = 13.78$ ($p < .01$)

The Practical Versus the Theoretical. The sample that received Form #3 was asked the following question: "If you were to participate in a college-level educational activity, which of the following would be of most interest to you? (Check one of each pair)." Tables 16 and 17 illustrate the responses to each of the pairs.

Table 16. Interest in practical over theoretical courses.

Course Types	Percent of Responding Sample (N=48)
Practical or Applied Courses	85%
Theoretical Courses	15%
Total	100%

Table 17. Interest in skill development emphasis or knowledge emphasis.

Emphasis	Percent of Responding Sample (N=48)
Skill development emphasis	52%
Knowledge emphasis	48%
Total	100%

Table 16 shows that among these 48 persons, 85% favored practical or applied courses over theoretical. Table 17 shows about an equal number of respondents preferred courses that emphasized skills rather than emphasized knowledge.

Specific Academic Interests. Form #3 asked the question "If a postsecondary education opportunity were available to you, which of the following academic areas would be most appealing to you? (Check all that apply)." The traditionally academic alternatives are presented in Table 18, in the order of their frequency of selection.

By far the most appealing academic area for this sample of 57 respondents was Business and Administration, with 38% of the group selecting this area. The next most popular choices were Psychology, Humanities, Social Sciences and Agriculture, each being selected by about 20% of the sample. The remaining alternatives were selected by 5% to 13% of the sample.

The high appeal of Business and Administration may be another indication of the desire for practical courses previously suggested in Tables 11, 12, and 16. Little can be said about the remaining selections, due to the uncertainty of statistics based on a sample of this size. However, an interest in courses related to agriculture is not surprising in an agricultural state. Similarly, the interest in the typical "Core Curriculum" courses of Psychology, Humanities or Social Science, is to be expected.

Table 18. Relative appeal of various academic areas.

Academic Area	Percent of Responding Sample (N=56)
Business and Administration (Accounting, Sales, Management, etc.)	38%
Psychology (Clinical, Social, Industrial)	23%
Humanities (Fine arts, Language, Philosophy)	23%
Social Sciences (Economics, Political, Sociology)	19%
Agriculture and Related Fields (Soils, Forestry & Farming)	19%
Other Professional Fields (Architecture, Law, Theology)	13%
Physical Science (Physics, Astronomy, Chemistry)	9%
Education (Elementary, Secondary, Adult)	7%
Health Professions (Medicine, Dentistry, Pharmacy)	7%
Biological Sciences (Botany, Ecology, Zoology)	5%
Engineering (Electrical, Civil, Mechanical)	5%
Mathematics	5%
Total*	173%

*Total is over 100% because a number of respondents selected more than one area.

Specific Practical Interests. Form #2 asked the respondent to indicate with a checkmark which of the practical topics listed in Table 19 were important to him. The topics are listed in the order of frequency of selection, and the percentages refer to the proportion of the 50 respondents that selected each item.

Table 19. Relative importance of various practical topics.

Topic	Percent of Responding Sample (N=50)
Income Tax/Personal Finances	44%
Investing	42%
Human Relations	34%
Consumerism	26%
Home Repair	26%
Gardening	20%
Real Estate	18%
Child Rearing	16%
Metrics	16%
Personal Health	16%
Photography	14%
Ecology	12%
Nutrition	10%
Interior Design	8%
Aging	8%
Drug Education	6%
Total*	316%

*The total is over 100% because respondents chose an average of 3 topics each.

The most often selected practical topics of importance to this sample of 50 respondents were Income Tax/Personal Finance, and Investing, with 44% and 42% of the sample indicating these areas as being important to them. Human Relations comes in a close third, being chosen by about one-third of the sample. The remaining topics were selected by from 6% to 26% of the sample.

Summary of What People Want to Learn. The majority of the questions on the three market survey forms were intended to find out what people wanted to learn. In response to the question of why they wanted to learn, "To increase my general knowledge" was by far the most popular reason, with "To increase my current level of schooling" and"...career improvement" also being selected by over half of the persons responding (see Table 11).

In selecting the "most important" general areas of study, almost half of the respondents indicated that business or trade related subjects were important, with "Regular school subjects" and subjects related to leisure time being chosen as important by a slightly less than a third of the sample (see Table 12).

The question of credit was addressed from two points of view. It appears that while an approximately equal proportion of persons (about 40%) preferred either a college-type course for credit, or a non-college course for no credit, relatively few respondents preferred a college course for no credit (see Table 13).

A similar question on another of the three market survey forms simply asked for an indication of preference for receiving credit for college-level courses. A similar reluctance to take college-level courses for no credit was observed, with less than a third of the sample preferring that option. The data on this item were further broken down in terms of age group, and a significant relationship ($p < .01$) emerged. While all 15 of the youngest age group (20 to 34) preferred to receive credit for college-level courses, only 3 out of the 11 in the oldest age group (50 to 64) preferred such credit. The preference of the middle group (35 to 49) was divided. This is probably a real relationship which should be considered in planning for learner options (see Tables 14 and 15).

A large majority of the respondents preferred "Practical" over "Theoretical" college-level educational activities, but an equal number preferred college-level courses that emphasized either "skill development" or "knowledge." The interpretation of the term theoretical among the general population may be open to question, however (see Tables 16 and 17).

"Business and Administration" was the preferred academic area of 38% of the sample, with the broad traditional areas of Psychology, Humanities, Social Science and Agriculture each being selected by about 20% of the sample.

"Income Tax," "Investing," and "Human Relations" were the most popular practical topics, being selected by 44%, 42%, and 34% of the sample, respectively.

In general, it appears the major goals of these three samples are to advance economically and/or increase their general knowledge. Whenever an option on one of the forms was clearly related to either of these goals, it was very strongly supported.

This should not, however, be interpreted to mean that few people had other educational goals. Each of the alternatives to each question was selected by someone. If only 1% of the population of Nebraska is interested in Ecology, or Nutrition, or Metrics, for example, that proportion still represents a potential course enrollment of over 15,000. Furthermore, while each individual has goals and interests common to most other persons, he also has goals and interests common to none. The latter are at least as important as the former, and must also be served.

How People Want to Learn

A number of questions were asked of individuals in our sample relating to their preferred method of learning, in terms of place, amount of direction needed, and preferred media. These data are presented in the following sections.

Preference for location. Form 1 asked the respondent to rate each of a number of locations in terms of their being satisfactory as places at which to participate in an educational experience. The locations are listed in Table 20 below, in order of the percentage of times each was chosen as satisfactory.

Table 20. Ratings of various locations for educational experience.

	Ratings[a] (N=40)		
Location	Satisfactory	No Preference	Not Satisfactory
Learning Center, if it existed near my home	82%	15%	2%
Local College	71%	12%	15%
In My Home	65%	9%	25%
University	64%	18%	18%
Library	53%	34%	12%
High School	47%	36%	17%
Civic Center	41%	32%	27%
Elementary School	40%	32%	27%
Museum, Art Gallery	35%	36%	28%
At My Place of Work	35%	19%	45%
YMCA	27%	40%	32%
Shopping Center	25%	33%	41%
A Church	12%	43%	45%

[a] Note that each row indicates the percentage of selections of each rating category. Thus, each row totals to 100%, with rounding error. For example, 82% of respondents indicated a learning center was a satisfactory location, 15% had no preference, and 2% regarded it as not satisfactory.

For the most part the locations seem to be ordered according to a common sense notion of where higher level educational activities usually take place, with educational institutions high on the list, and churches and shopping centers at the bottom. The very notable exceptions to this rule are the learning center (if it existed near home) and the home itself. Though these two locations are the ones that UMA/SUN has chosen to emphasize so far, it is doubtful many of the respondents would have been aware of this emphasis. It appears the notion of "College at Home" (or near home) may be a viable one.

It is also important, however, to note the minority responses. Most of the locations were considered "satisfactory" by a large portion of the sample. Particularly worthy of note is that 35% of the respondents indicated their place of work was a satisfactory location for an educational experience.

Independence of Study. One of the problems of independent study is that many people who need the flexibility of location, schedules and goals, have difficulty studying independently. One of the goals of open education must be to provide both the flexibility desired, and the direction and guidance required by various types of learners. An indication of the degree of independence desired by our potential students is the sample's response to an item on Form #2 asking "How do you feel you learn best?" The three alternatives are listed in Table 21, in the order in which they were presented. The percentage of the 50 respondents selecting each alternative is also given.

Table 21. Responses to the question "How Do You Feel You Learn Best?"

Amount of Direction	Percentage of Responding Sample (N=50)
I need others to direct me	8%
I can teach myself through independent study	16%
I learn best through a combination of independent and directed study	76%
Total	100%

The data in this table seem to indicate the idea of directed independent study is an important one for UMA/SUN, and relatively few people in this sample felt they could learn best by teaching themselves through independent study. It should be noted, however, these three choices may be given quite different interpretations by different persons. "Teaching myself through independent study" could mean obtaining books and materials and receiving no additional help, or it could mean following a rigidly specified schedule at home. The degree of independence and guidance that is optimal for UMA/SUN's learners is something that must be carefully studied.

The same question was addressed on the same form from a somewhat different point of view. Table 22 lists the distribution of responses to the question "If you were to engage in an educational activity, which one of the following educational means would best suit your needs?" The alternatives are listed in the order of the percentage of the 50 respondents that chose them.

Table 22. Relative suitability of various educational means.

Activity	Percent of Responding Sample (N=50)
Evening Class	52%
Educational TV (ETV)	22%
Regular Classes at College or University	22%
Correspondence Study	20%
Conference or Workshop	16%
Local Discussion Group	12%
Study on My Own	12%
Total*	156%

According to these data, the most suitable educational means for this sample was the evening class, selected by about half of the respondents. Only 12% of the 50 said that studying on their own or with a local discussion group would be best suited to their needs. The remaining alternatives were each selected by about 20% of the sample.

This data seems to be somewhat at variance with the data presented in Table 20, which shows 65% of the same sample felt participating in an educational experience at home was satisfactory, but is in accord with the data presented in Table 21, which shows most of the Form #2 sample prefers to have some guidance in their studies.

It should also be kept in mind, when interpreting these data, the responses may reflect a traditional understanding of the nature of evening courses or of studying on one's own. If nontraditional alternatives had been understood, the responses might have been quite different. It would probably be worth investigating what aspect of an evening course is appealing to students, if such an appeal can be further substantiated. Is it the interaction with a group that people desire? Or with a live professor? Or is it merely the evening hours that are desirable? Some answers to these questions are suggested in this report. They do seem to merit further consideration, however.

Preferred Media. In an effort to assess the media preferences of SUN's potential audience, Form #2 asked the respondents to rank each of six listed media according to their preference for use in learning by writing a "1" after the most preferred source, a "2" after the second most preferred, and so forth. Table 23 presents the six media, in order of their average ranking.

Table 23. Average rankings of various learning sources. (N=37)

Rank	Learning Source	Average Ranking
1	A Personal Presentation or Group Discussion	1.68
2	A Book	2.56
3	Educational TV	2.69
4	A Booklet, Article, or Pamphlet	3.61
5	Tape Recording or Record	3.97
6	Radio	5.02

Here more than ever it appears the choices were made primarily on the basis of knowledge of what has been available in the past. If this is the case, and if UMA/SUN deems it useful to offer alternative media, then it appears there is probably a need to educate the public as to the new media's utility.

Summary of How People Want to Learn. This section certainly raises more questions than it answers. It seems clear most people have a fairly traditional idea on how one becomes educated. Traditional educational institutions were generally rated as being satisfactory places to learn. Most persons preferred a combination of directed and independent study. Evening classes were deemed most suitable, and studying on one's own was least suitable. When asked to rank educational media according to preference as a learning source, the rather predictable order of Lecture, Book, TV, Booklet, Tape or Records, and Radio appeared. The only exceptions to the traditional in this section seems to be in the rating as "satisfactory" of learning centers as a place to study by 82% of the sample, and of the home by 65% of the sample, certainly two very important exceptions in favor of UMA/SUN's current practice.

The questions raised in this section include the following: Why do people select the traditional? Is it because it serves them better, or because it is all they know? How do we tell the difference? To what extent will UMA/SUN have to educate its potential population to the utility of alternative media? What are the benefits of the traditional that have kept it traditional?

Is there an optimal combination of independence and direction? How can UMA/SUN individualize direction? How can people be helped to direct themselves? What is sacrificed by direction? By independence? What is gained? These questions need to be answered if the mechanisms of open education are to run smoothly.

Educational Plans

Three questions were asked in the market survey which dealt with the respondents' educational plans, and factors that might influence them. Form #3 contained the question, "Do you think you will participate in some type of academic course work in the next five years?" The distribution of responses to the various alternatives are listed in Table 24 below.

Table 24. Likelihood of participation in academic course work in the next five years.

Response	Percent of Responding Sample (N=56)
Yes, I'm quite sure	25%
Yes, I probably will	25%
I can't say one way or another	27%
No, I probably won't	21%
No, I won't	2%
Total	100%

While only one person out of the 56 in the sample indicated that they wouldn't participate in any type of course work in the next five years, the responses were evenly distributed over the remaining items ranging from "No, I probably won't" to "Yes, I'm quite sure," with approximately half of the sample indicating they would at least probably participate.

The respondents to Form #2 were asked to indicate which two or three of the factors listed in Table 25 might prevent them from participating in additional educational experiences. The factors are listed in the order of their frequency of selection.

"Family/job responsibilities" and "Not enough time" were each selected by about half of the sample of 50, with lack of ability or opportunity low on the list.

Table 25. Factors preventing participation.

Preventing Factor	Percent of Responding Sample (N=50)
Not enough time	56%
Family/Job Responsibilities	48%
Inadequate Personal Finances	32%
Lack of Practical Courses Available	32%
Lack of Motivation	22%
Lack of Educational Opportunities	10%
Doubts about Ability to do the Work	8%
Other	6%
Total*	215%

*The total is more than 100% since most persons chose more than one item.

Form #3 listed a number of common activities, and asked the respondents to indicate which they would have to spend less time on were they to engage in a new educational activity. Table 26 presents these activities in their order of frequency of selection.

The data clearly show the respondents feel it would be the leisure type activities that would be sacrificed for an educational experience. The frequent selection of "Not enough time" in Table 25 as a factor preventing educational participation poses an interesting question. Do people truly have "leisure time?" If so, why did half report they didn't have enough time? If not, what kinds of activities are 77% of the respondents indicating they would have to drop in the name of education?

Table 26. Current activities which new educational activities would have to supplant.

Activity	Percent of Responding Sample (N=56)
Leisure	77%
Recreational	27%
Social	24%
Hobbies	20%
Work	14%
Civic/Political	10%
Religious	8%
Fraternal Service	6%
Total*	186%

*The total is over 100% since many persons made over one selection.

Summary of Educational Plans. It should be recalled that the survey sample is apparently biased in the direction of the more highly educated. Nevertheless, it is significant that half of the responding sample indicated they will, or probably will, participate in academic course work in the next five years. Since time and family/job responsibilities appear to be the major deterrent to continuing education, methods of making the educational process more convenient to the learner would probably be very well received.

Overall Summary of the 1974 Market Survey

In an effort to learn more about the goals of UMA/SUN's potential Nebraska audience, 1600 persons, whose names had been selected randomly from all of the phone books in the state, were mailed one of three questionnaires. A total of 156 persons responded, or about 50 persons for each form.

An analysis of the demographic variables common to each form showed that due to the phone book method of sampling, far more men than women responded. The response also seemed to be biased in that a higher proportion of middle-aged persons and of relatively more educated persons were represented than is present in the state adult population. The possibility this bias was due to a greater interest in continuing education by these groups was discussed, in light of the fact UMA/SUN's present learner population is similarly biased.

In response to questions about what they wanted to learn, the majority of respondents apparently preferred courses that would help them to advance economically and/or academically. While every alternative was chosen by at least one person, practical courses, and courses related to finances, were the most popular. With regard to the question of credit, an equal number of persons preferred college courses for credit, as did prefer non-college courses for no credit. However, all 15 of the younger persons indicated that if they took college-level courses, they would prefer to get credit for them, while only 3 out of 11 older persons felt this way.

When asked how they wanted to learn, most persons responded in a fairly traditional manner, with the exceptions being the rating of learning centers and the home as satisfactory places for learning by a large majority of the respondents. A number of questions were raised in this section as to why the traditional appeared to be so popular, and the need for educating the public with regard to the utility of alternative media was suggested.

Half of the responding population felt they would probably engage in some type of academic course work during the next five years. Lack of time and family responsibilities were cited as the major deterrents to these plans, and most felt leisure time activities would have to be sacrificed if the plans were fulfilled.

Cautions in Interpreting These Data. The reader must remember what the data in this report do and do not represent. They do accurately represent the responses of 156 persons who volunteered to return a somewhat randomly distributed form. While it does appear the respondents are in many ways similar to the adult population of Nebraska and/or SUN's present learner population, a number of distinct differences have been identified. Also, the possibility does exist that the sample is totally biased in terms of some unmonitored variable. These data can only be viewed as suggestions of what *may* be the case. They can be meaningfully used *only* in the context of other formal and informal corroborating data. Finally, it may be the case that UMA/SUN does not *want* to serve the entire Nebraska or Midwest population, but would rather prefer to focus in on a subgroup only lightly sampled in this survey. If this is the case, a more focused survey is in order.

Student Information Questionnaire

As of October 1, 1974. SUN had a learner population. The enrollment of learners was of great significance for many reasons. One of the reasons was that attention could now be shifted from exclusively wondering about *prospective* learners, to inquiring into the goals and characteristics of *actual* learners.

In an effort to study those learners, the Office of Research and Evaluation prepared a rather extensive Student Information Questionnaire (see Appendix B) which was sent to all enrolled learners. To date, 60% of the questionnaires have been returned.

The Student Information Questionnaire includes questions about many aspects of the background, hopes, and ideas of SUN learners. A complete report of the study is being prepared. For purposes of this chapter of the

1974 Final Report, those questions most closely relevant to learner goals have been targeted for analysis, and are reported in the pages to follow.

As suggested above, market surveys previously utilized by UMA/SUN were designed to assess the needs of potential UMA/SUN students, and have given us at least some general idea of the nature of our potential audience. However, it was felt that a much more in depth look at our actual students was needed to enable us to better understand and interpret our formal and informal incoming data on learner progress and perceptions. For this purpose, a detailed student information questionnaire, referred to as the Learner Characteristics Survey, was prepared by the Research and Evaluation Department. The questionnaire consisted of seven major sections: General Information, Education, Employment, Use of Leisure Time, Personal Resources Available for Education, Goals, and Enrollment Information.

The total questionnaire consisted of 170 brief items, of which 17 dealt directly with student goals. These items, selected, reviewed, and revised by UMA/SUN staff members, were based in part on portions of questionnaires used in similar studies at the British Open University and Empire State College.

A questionnaire was sent to each of SUN's approximately 600 students on November 18, 1974, and as of December 12, 1974, approximately 60% have been returned. In addition to the explanatory cover letter from the Director of Research, an advance letter was sent from the SUN delivery office to reassure each student of the form's utility and confidentiality, and as a reminder of their freedom not to respond if they so desired.

For the most part, the data have not as yet been analyzed beyond simple frequency counts and descriptive statistics across the total population.

Summaries of these analyses are being circulated among UMA/SUN staff to provide some initial insight into the nature of the SUN learner, and to stimulate the production of more specific questions and hypotheses to be dealt with in subsequent analyses.

Some information on the learner population was already available, based on data from the initial registration forms. About half of SUN's students are in the age range of 36-55, and over 75% are female. Homemakers comprise 41% of those taking the Psychology course and 34% of those taking the Accounting course. About 15% of all SUN's students are in professional, technical or managerial occupations, 25% are in clerical or sales occupations, and the remaining students are distributed about equally over a range of other occupations. The "Not For Credit" option has been elected by 28% of the Accounting students, and 14% of the Psychology students, with only 6% of all SUN's students electing the "Pass-No Credit" option. About half of SUN's students in each course have had college experience, but it does not appear to be related to whether or not a student elected the "Not for Credit" option.

Ratings of Goals

The Student Goals section of the Learner Characteristics Survey consists of a list of 15 statements of possible goals, plus an open ended "Other." Each goal was to be rated as "Not Important," "Somewhat Important," or "Very Important." In addition, the respondent was asked to indicate which one of the statements was the most important to him. A final item asked the learner to indicate the highest academic degree he hoped to obtain.

The list of goal statements from the survey is presented in Table 27, in the order of the importance ascribed to them by the respondents, with a

"Not Important" given a value of zero, and a "Very Important" given a value of two. Thus, if exactly one-third (33%) of the learners checked "Not Important" for any one goal, another third checked "Somewhat Important," for the same goal, and the remaining third checked "Very Important," that goal would have an average rating of 1.0. It is according to this average rating that the goals are ordered. Note the percentage figures are rounded to the nearest whole number. Each row sums to 100%, as every respondent completed this section.

Probably the most meaningful statistics in Table 27 are not the average ratings, but are rather the percentages of learners marking "Very Important" in each category. For instance, item "h", "To obtain a degree which is required for my present or future job," was the second from the last in terms of its average rating. However, it would be foolish to dismiss this goal as therefore being unimportant, for a full 22% of our present sample did in fact state that this goal was very important to them, and another 22% said it was somewhat important. To disregard this goal because of a low overall average would be to disregard a goal that was very important to a large portion of our learners. Similar statements could be made about each of the above goals. What the figures in Table 27 do indicate is while some goals are held in higher esteem by larger segments of the sample than others, most of the goals are considered to be "Very important" by at least 20% of our sample.

The Most Important Goal

While the first part of the Goals section of the Learner Characteristics Survey asked the learner to respond to each goal statement, the second part asked that she simply indicate which single goal statement was the most important to her. For the sake of clarity, the goals have been grouped into three clusters, each of which contains similar or related goals.

Table 27. Goal statements listed in the order of the average importance ascribed to them by SUN learners (N=367).

Goal Statement	Not Important (0)	Somewhat Important (1)	Very Important (2)	Average Rating
l. Simply, to learn	6%	17%	77%	1.71
e. To attain specific skills that will be useful on a job	19	28	53	1.33
n. To increase my confidence to undertake learning projects	21	31	48	1.27
k. To improve my self-image	20	38	42	1.23
f. To increase my awareness of different philosophies, cultures and ways of life.	27	37	36	1.09
g. To improve my chances of making more money	31	33	36	1.06
o. To use leisure time creatively	32	35	33	1.00
i. To learn how to participate effectively as a citizen in my community	35	44	21	.87
m. To improve my professional status	44	26	30	.86
j. To develop an understanding and an appreciation of science and technology	37	43	20	.84
c. To develop a new career	45	28	27	.81
b. To discover my vocational interests	44	34	22	.77
a. To increase my appreciation of art, music, literature and other cultural expressions	45	35	20	.75
h. To obtain a degree which is required for my present or future job	56	22	22	.67
d. To become involved in social and political concerns	51	37	12	.61

These clusters have been termed "Career Improvement," "Academic Self-Concept Improvement," and "Cultural Growth and Development." The three clusters were suggested by a mathematical procedure called Factor Analysis.

The Factor Analysis procedure essentially looks for patterns of responses by each subject and compares them to patterns of responses of all other subjects, to locate specific types of patterns for the group of respondents. For instance, in the present example it appears that very often when the goal "To increase my awareness of different philosophies, cultures and ways of life" was rated very highly by a student, the same student also rated highly the goal "To increase my appreciation for art, music, literature, and other cultural expressions." Likewise, students who rated the former as being unimportant, usually rated the latter the same. This suggests these two items are somehow similar, and it might be useful to think of them, and others that behave like them, as belonging to a single cluster of similar goals. This is essentially the procedure used to suggest the grouping of the goals being used in this report.

The first cluster of related items could be termed "Career Improvement." The six items included in this cluster are listed in Table 28. They are ordered within the cluster according to the percent of persons in our sample who selected the respective goal statement as their single most important goal. For example, 14% of the total sample of students selected the goal "To attain specific skills that will be useful on my job" as being the most important goal, and 40% of the total sample selected one of the items in the Career Improvement cluster as being the most important.

Table 28. Distribution of selections of each goal statement with the Career Improvement clusters as being Most important (N=367).

Goal Statement		Percent of Sample
e. To attain specific skills that will be useful on a job		14%
c. To develop a new career		8%
h. To obtain a degree which is required for my present or future job		6%
g. To improve my chances of making more money		4%
m. To improve my professional status		4%
b. To discover my vocational interests		4%
	Cluster Total	40%

It should be noted the factor analysis actually suggested this cluster be broken down into two clusters--the first relating to starting a new career (items "c" and "b" above), and the second relating to improvement of a present career, (items such as "g" and "m"). While both groups were combined into a single cluster for illustrative purposes, it may be wise to keep the distinction in mind. It seems reasonable to expect a person who has a successful position he wants to enhance by taking a SUN course may be quite different from a person who has no job, or a job with which he is very dissatisfied, and who wants to use a SUN course as a start on a new life. The former is more likely to have a perception of immediate relevance (or irrelevance) for a course, based on his experience with a certain kind of work, and his knowledge of the utility of the course for that work, and might not be overly concerned with his actual grade in the course. The latter, on the other hand, is more likely to be less educated, less certain of what he really wants or needs from the course, and may look upon his progress through the course as an indication of what his life's work should be. Other differences of motivation and interest may also be important to consider here.

The second cluster of related items could be termed "Academic Self-Concept Improvement." The four items in this cluster, chosen by a total of 34% of the sample, are listed in Table 29.

It is important to notice that a full 22% of the sample chose "Simply, to learn" as being the most important goal. It might also be argued that the remaining three items shouldn't even be grouped with the first. However, the factor analysis does give a rather clear indication there probably is some validity to such a grouping. That is, subjects who rated "Simply, to learn" highly also tended to rate the other three items highly. There seems to be a consistent positive relationship between wanting to learn, and wanting to become more self-confident.

Table 29. Distribution of selections of each goal statement within the Academic Self Concept Improvement cluster as being most important (N=367).

Goal Statement	Percent of Sample
l. Simply, to learn	22%
k. To improve my self-image	6%
n. To increase my confidence to undertake learning projects	5%
o. To use leisure time creatively	1%
Cluster Total	34%

The final cluster was the strongest in terms of the regularity with which a high rating of one of its members occurred with a high rating of the others, but weakest in terms of the number of persons considering it to be most important.

This cluster could be termed "Cultural Growth and Development." The five items within this cluster are listed in Table 30.

Some caution must be used in the interpretation of Table 30. While it does state only 13% of the sample selected a "Cultural Growth" goal as being most important, with the bread-and-butter goals related to career improvement being chosen far more often, it would again be a mistake to conclude that few persons thought these goals were important. A review of Table 27 reminds us that from 12% to as much as 36% of the sample actually considered one or more of the Cultural Growth items as being "Very Important," and in most cases, less than half of the sample considered them as being "Not Important."

Table 30. Distribution of selections of each goal statement within the Cultural Growth and Development cluster as being most important (N=367).

Goal Statement	Percent of Sample
i. To learn how to participate effectively as a citizen in my community	4%
f. To increase my awareness of different philosophies, cultures and ways of life	4%
a. To increase my appreciation of art, music, literature, and other cultural expressions	3%
d. To become involved in social and political concerns	1%
j. To develop an understanding and an appreciation of science and technology	1%
Cluster Total	13%

Degree Goals

The final item in the goal section of the Student Information Questionnaire asked the question: "What is the highest academic degree you hope to obtain?"

The percentage of responses to each alternative is listed in Table 31.

Table 31. Academic (Degree) Goals of a sample of SUN learners (N=367).

Degree	Percent of Sample
None	38%
Associate degree (A.A. or equivalent)	11%
Bachelor's degree (BA, BS, etc.)	30%
Master's degree (MA, MS, etc.)	8%
Doctor of philosophy or education (PhD or EdD)	3%
Medical degree (MD, DDS, etc.)	1%
Law degree (LL. B., JD)	1%
Theological degree	0%
Other	8%

Summary

In the Goals section of the Student Information Questionnaire which was returned by 367 of SUN's approximately 600 learners, respondents were asked to rate each of 15 goals as being "Not Important," "Somewhat Important," or "Very Important." They were also asked to indicate which single goal was the most important. Finally, they were asked to indicate the highest academic degree they hoped to attain.

The goals were grouped into three categories as suggested by a factor analysis of the responses. The groups were labeled "Career Improvement," "Academic Self Concept Improvement," and "Cultural Growth and Development." "Career Improvement" goals tended to get the highest ratings, and tended to get chosen most often as being most important. The most prominent exception to this was the goal "Simply, to learn" in the "Academic Self Concept" cluster, which had the highest rating, and was chosen most often as being the most important goal. The "Cultural Growth and Development" goals were chosen least often, and given lower ratings than the others. There was a wide variation in responses, however, with each of the goals receiving ratings of importance by some significant portion of the sample. No degree was sought by 38% of the sample, while 30% hoped for a B.S., and the remaining 32% hoped for some other academic degree.

Certain precautions have to be taken in the interpretation of the data in this report. One precaution is in the interpretation of the clusters of goals. With another population of students, or another list of goal statements, the clustering might be different. For instance, with a much wider variety of students, more men, more younger people, or more traditional students, the three large clusters could break into a larger number of more specific clusters. Similarly, if the goals were more finely specified and defined, and a larger number listed, more well defined clusters might also emerge. The value of this use of factor analysis is not in its revelation of some true or ideal structure, but in its identification of certain intra-item relationships which can provide a context for further conceptualization.

Probably the most important precaution is that it be kept in mind that these statistics reflect the perceptions of SUN's present students, two-thirds of whom are taking Accounting I, and one-third of whom are enrolled in Psychology. It would be a mistake to assume this particular set of students, unique by virtue of their interest in an experimental project and by their desire to take these particular courses, are necessarily representative of SUN's potential student population.

Synthesis

As UMA continues to define its direction and purpose, two necessary questions continue to be asked: "Who are UMA's potential learners?", and "What are their goals?" In this section of the paper an attempt is made to synthesize findings from the various survey results reported above with findings of other similar studies, and to offer some recommendations as to how the Office of Research and Evaluation might obtain additional information on potential learners and their goals, to help inform decisions about UMA's future direction.

Who Desires Postsecondary Education?

The "typical" student currently enrolled in a SUN course could be stereotyped as a 39 year old woman with a better than average education. About half of SUN's students are in the age range of 35 to 55, 78% are women, and about 36% are homemakers. Fifty percent report having participated in college level courses in the past five years. These students paid tuition to enroll in SUN, usually after hearing about SUN through various advertising media.

The rate of return of the 1974 SUN Market Survey, which had been mailed to names randomly selected from Nebraska's phone books, was highest in the 35 to 49 age range, and among the more educated. Earlier market surveys in Nebraska and other Midwest areas indicated that interest in adult education is strong through age 40 or so, after which it begins to taper off.[2,3] However, one such report specifically noted that there was an especially high interest in SUN-type courses among 40-49 year old women.[4] Two of these early market surveys noted that interest was highest among those who had had previous continuing educational experiences.[5,6]

Similar surveys of potential students by the University of Wisconsin Extension Division,[7] as well as actual course registrations at Empire State College, Minnesota Metropolitan State College,[8] and the ETS Open University investigation, indicate about as much interest in nontraditional courses among men as among women. The Humanities course of the ETS investigation was an exception, attracting twice as many women as men.[9]

Though most of these studies indicated that interest in continuing education was related to age, with relatively more younger than older persons being interested, in fact there was interest at all age levels. For example, ESC and MMSC reported that 21% and 28% of their graduates, respectively, were over the age of 50.[10] The ETS investigation had a far greater proportion of older persons among its nontraditional learners than among its traditional students, with 45% of its nontraditional students over the age of 35, as opposed to 5% of its traditional students.[11]

What Are the Goals of Adult Learners?

Houle[12] cites a demand study of a random sample of learners and would-be learners in the United States, by Educational Testing Service. Would-be learners were defined as those 77% who answered affirmatively to the question "Is there anything in particular that you'd like to know more about or would like to learn how to do better?" Learners were defined as that portion (31%) of the same population of adults who responded affirmatively to the question "Within the past twelve months, have you received (or are you receiving) instruction in any of the following subjects or skills?" A long list of topics followed.

Highest among the reasons for "learning more about something" was "the desire to know," "desire to reach a personal goal," and "desire for personal fulfillment." Gould[13] grouped the same responses in a slightly different manner, and found that "information and intellectual development", and "job and educational development" were by far the most popular reasons cited by both groups. Houle[4] also reports data collected from persons interested in the Regents External Degree in New York State. Slightly over half of these 1,370 respondents cited employment, and slightly less cited self evaluation or personal satisfaction, as reasons for pursuing an external degree.

The 1973 SUN clientele study concluded that the potential learners "desired more education primarily because it might increase their job advancement opportunities, but a sizeable proportion indicated that enrichment of 'continuing to grow' was sufficient motivation."[15] The February, 1973, SUN study indicated that personal fulfillment, general knowledge, and job advancement were the most popular reasons that respondents gave for actually having taken non-college courses. Obtaining college credit was the most popular reason (chosen by over 50%) both for *having taken* college correspondence courses, or *to take* a SUN course, had it been available.[16] The March market survey revealed similar reasons for taking *college* courses, with self improvement, knowledge growth, and job oriented reasons each being chosen by about a third of the sample.[17]

The 1974 Market Survey indicated that increased general knowledge was cited by 70% of 50 respondents, career improvement by 56%, and academic advancement by 54%, as a reason for participating in an educational activity. In general, whenever the 50 respondents to any of the three survey forms were asked to indicate an interest in, or preference for, a learning activity associated with economic advancement, e.g., learning about business or vocational subjects, income tax, or investing, almost without fail these activities were rated most highly.

The survey of present learners, responded to by about 60% of SUN's 626 students, indicated that "Simply, to learn" was by far the single most highly rated goal (chosen as "very important" by 77% of the sample). Forty percent of the responding learners selected various job related goals as being most important, 34% selected goals related to general academic improvement as being most important, and 13% selected cultural growth and development goals as being most important. (These three groupings were suggested by a factor analysis of the data.)

What About Credit?

The question of credit has been frequently addressed. Seventy-six (76) percent of SUN's present learners have elected to take their course for credit. Of those 1/4 - 1.7% of the February, 1973, Market Survey sample who were selected as "very likely" to take a SUN course, over half were interested in taking it for credit.

Two samples from the 1974 SUN Market Survey were asked about their credit preferences. About equal proportions (about 40%) of one sample of 47 preferred either a non-college course for no credit, or a college course for credit, with only 20% preferring a college level course for no credit. Seventy-two (72) percent of a second sample of 53 indicated they would prefer credit for taking a college level course, as opposed to 28% who would prefer the non-credit option for such a course. However, it is important to note that there seems to be a strong relationship between desire for credit and age, with younger persons desiring credit far more often than older.

In a similar study of potential adult learners by the University of Wisconsin Extension Division, only about 20% of a randomly selected adult population said it would be important for them to earn college credit for the subject about which they were interested in learning more.[18] According to Gould,[19] only 17% of the "would be learners" and 8% of the "learners" desired credit for continued learning.

In a study of potential adult learners in the St. Louis area, nearly 50% under the age of 25 desired college credit toward a degree for learning experiences, while only 12% over the age of 65 desired such credit.[20] In the ETS Open University investigation, 22% of the enrolled nontraditional students indicated that a desire to earn college level credits was a reason for enrolling in the Open University courses. Surprisingly, only 24% of the traditional students cited earning college credits as a reason for enrolling.[21]

Deterrents to Continuing Education

About half of one of the 1974 SUN Market Survey samples (N=50) reported that insufficient time and/or family responsibilities were the major deterrents to continuing their education. Cost was cited by about a third of the sample. Seventy-seven (77) percent of another sample from the same survey (N=56) indicated that leisure time would have to be sacrificed if they were to continue their education.

The University of Wisconsin Extension survey similarily indicated lack of time was most often cited as a deterrent (43%), with only 14% of their sample citing lack of money.[22] The nontraditional students in the ETS investigation indicated that reading and/or watching TV had to be given up most often for their education, followed by other leisure time activities.[23] Thirty-seven (37) percent of the respondents to the St. Louis study cited cost as an obstacle to instruction, with all of the other most often cited obstacles (those cited by over 15% of the sample) being related to not having enough time.[24]

Educational Methods

In general, when potential learners are asked to state a preference for a method of education, they more often than not choose what has most often been available in past years. Gould,[24] reporting on the "would be learners" in the previously mentioned demand study, indicates that lectures and classes are the most preferred method of instruction (28% chose this method), with correspondence courses (3%), radio (1%), and TV (1%) chosen by relatively few. Similar indications have been made by one of the samples in the SUN 1974 Market Survey, with the evening class being considered suitable by over half of the respondents, as opposed to "study on my own" being chosen by only 12%. Similarly, personal presentations or group discussions were rated most highly as a learning source, and booklets, tape recording and radio were rated lowest. Gould[25] says of the demand study responses: "In view of the successes achieved by the new technologies in experimental programs where they have been used with skill and ingenuity, it seems clear from these data that important educational opportunities are being missed."

Discussion of Market Surveys

A number of results have consistantly surfaced in many studies across the United States, and have been replicated in the four market surveys done by SUN, and in the survey of SUN's present learner population. There is a strong interest among large numbers of persons in continuing their postsecondary education away from a traditional college campus. Interest among the 30-45 year olds is comparable to that of younger adults, and is apparently positively related to having had previous educational experiences. Two broad goals that regularly appear among actual and potential adult learners are to increase their general levels of knowledge, and to advance economically. The greatest deterrents to achieving these goals are most often insufficient time and personal responsibilities. If asked how they would like to learn, persons generally select tried-and-true methods such as lectures and books, and much less often select little used media such as radio, tape or TV.

The surveys in the preceding report have been fairly general, and it is important to keep in mind what they do *not* tell us. They give little indication of what adult learner's *specific* goals are. Neither do the surveys indicate the specific interests of adults. They define populations only in the most general terms. The results do not specify a curriculum, and in fact, have little to say about specific courses. They suggest what may be needed in terms of course design or delivery only in the broadest terms. In short, the surveys tend to confirm the general rationale for UMA's existence, i.e., that there is a need for continuing education among adults,but provide only general indicators of interest in certain areas of knowledge.

If information is desired which will adequately inform decisions about curriculum, design, or delivery, the shotgun approach may need to be left behind, in favor of more directed strategies. This need to more precisely define UMA's potential learners and their goals brings to light a sort of "Chicken-and-egg" problem. Goals do not exist independent of persons, yet goals often have to be presumed before a population is specified. For example, a market survey intended to identify potential learners must presuppose some sort of learner goals, that is, it can't be asked who wants continuing education unless continuing education is at least partially defined. On the other hand, if a survey is conducted with the purpose of identifying learner goals, an *a priori* definition of the relevant population must be made, i.e., the question must be asked of *someone*.

The 1973 SUN surveys focused on those persons interested in what had been defined as SUN-like courses. Those 10-12% of the adult population who were interested in general adult education were not followed up as were those 1.4 - 1.7% who preferred SUN-type courses. The study of SUN's present learners similarly was restricted to a group of persons interested in college level courses at home. Even the randomly distributed 1974 market survey forms seem to have been responded to by a relatively educated sample.

Similarly, such surveys have often focused on a rather traditional conception of educational interests or goals. It is probably difficult for most persons to think of educational interests outside of the context of traditional goals or settings. This may be the reason for the apparent contradictions that arise in the various surveys of preference for credit. Where educational goals are clearly but broadly defined as a general need to know, such as they were in the demand study discussed by Gould,[27] the percentage of persons desiring credit is rather low (17% of the would be learners, 8% of the learners). Studies that assume a more academic definition of educational interests, such as the 1973 SUN clientele study, show that over half of the potential learners desire credit for continued education.

If assumptions about learner goals and/or learner populations are not recognized and planned into UMA's subsequent market surveys, it is likely that the feedback from such surveys will continue to be of a general nature, useful as a point of departure for further study, but of little utility in planning for the future.

Recommendations

A series of market surveys more focused than those of the past is required. Some of these surveys should be designed to ascertain the needs of very specific populations identified by UMA as being the ones UMA wishes to serve. Others should be designed to clarify those broad needs identified by UMA as those which it intends to address, and to locate populations that possess those particular needs. Finally, in-depth surveys are required of well-defined populations already identified as having specific needs that UMA elects to serve, to more clearly define both the needs and the populations.

Possible populations which could be selected might include traditional college dropouts, minority persons, senior citizens, homemakers, mothers with young children, small business persons, persons in rural areas, people in specific professions, children, small business persons, persons in rural areas, handicapped persons, or any other population within the broad domain of the present definitions of potential UMA learners.

Possible needs or goals that could be clarified and for which populations could be searched out and identified include obtaining college credit, acquiring business or trade skills, achieving a broader understanding of the world in general, or mastering a well defined academic area.

Examples of well defined populations with specific needs or goals could include pesticide operators who must soon be licensed, nurses or other professionals who must be re-certified, senior citizens who need to be aware of relevant health care of social security legislation, or young parents who need to know how to raise and care for children.

There are virtually unlimited goals for which populations could be identified, and unlimited populations for which goals could be ascertained. If future surveys are to be sufficiently focused to provide information that is useful to UMA staff, possible goals and/or populations must be identified, and choices among them must be made.

Some general choices have already been suggested by UMA. The 1975 NIE Proposal[28] states that "...(UMA's) learners will be different, since (it) aims to reach target audiences among those who are not now reached by traditional institutions and since its learners are not restricted by admission requirements, or by rigidities of time and space requirements." In reference to the needs and goals UMA intends to serve: flexibility, diversity and individualization are stressed in both discipline and topic oriented areas.

To help insure that future studies will provide useful information to the UMA organization a number of specific recommendations can be made:

1. Presently available information on potential learner populations and/or goals should be studied to identify possible areas on which UMA may choose to focus future survey efforts. Sources of information include not only the present general survey data, but also the literature on adult education and the experience and informed intuitions of UMA staff.

2. Within the context of continuing UMA deliberations about its direction and purpose, specific populations and/or goals should be selected for closer scrutiny. These populations and/or goals must be specified well enough to insure that subsequent surveys can be sufficiently focused to provide information useful to UMA deliberations and planning. One population of focus should certainly be SUN's 1975 learners, a population obviously interested in SUN as it is presently perceived, but not necessarily the population SUN intends to serve.

3. A series of market surveys should be planned and executed, based on the above decisions. These surveys should take a variety of formats in order to obtain multiple views of the selected domains of interest. Possible formats, in addition to the mail survey include, but are not limited to: phone or face-to-face interviews of selected populations; site visits of

relevant institutions; meetings with existing community groups; interviews with educational, vocational or community leaders; and surveys of existing literature. The format(s) of choice will depend upon the intended foci of the surveys.

4. Information from such surveys should be evaluated by UMA staff in terms of its utility to the organization. If the information is found not to be useful, the survey techniques should be modified. If the information raises questions, possibly more than answers, decisions must be made as to which of these questions should be the focus of additional inquiry. In either case, follow-up surveys will be required.

5. Additional market surveys of general goals and interests of general populations should be discouraged, particularly within Nebraska. Member institutions interested in conducting their own surveys may be encouraged to focus either on the areas defined by UMA staff in the above manner, or on similarly well defined local concerns.

Summary

A number of surveys of learners' and potential learners' goals have been performed by SUN, and a general interest in continuing education among large segments of the adult population has been confirmed. In many respects the findings of these surveys have been similar to the findings of other surveys of adult learners and potential adult learners throughout the country. A general desire to know and/or a desire to advance economically are the most often cited reasons for continuing education. The lack of time is the most common deterrent.

Though these are important findings, they are general findings--too general to serve as anything but a point of departure for further study. It is recommended that specific goals and populations be identified and selected as the objects of additional, more focused surveys.

REFERENCES

1. Brown, Robert D. "An Open University for the Midlands: Why and for Whom?" *Research in Higher Education*, Vol 2, 1974.

2. *Clientele Study*, *Final Report of the State University of Nebraska to the National Institute of Education*, 1973.

3. *Central Surveys, Inc.*, *A Public Opinion Survey Conducted in Five Midwest Markets for State University of Nebraska*, 1973.

4. Flinn, Gordon. *SUN Study*, February 1973.

5. Flinn.

6. Central Surveys, Inc.

7. Division of Program and Staff Development, University Extension, University of Wisconsin. Background Information. *Survey Report No. 2*, 1973.

8. Lehmann, Timothy. *Success After Graduation*. *A Study of the Baccalaureate Graduates of Empire State College*, September 1974.

9. Hartnett, Rodney, *et al*. *The British Open University In the United States*, June, 1974.

10. Lehmann.

11. Hartnett, *et al*.

12. Houle, Cyril. *The External Degree*, 1973.

13. Gould, Samuel. *Diversity by Design*, 1973.

14. Houle.

15. *Clientele Study*, *Final Report of the State University of Nebraska to the National Institute of Education*, 1973.

16. Flinn.

17. Central Surveys, Inc.

18. Division of Program and Staff Development, University of Wisconsin Extension. *Background Information*, *Survey Report No. 7*, 1973.

19. Gould, Samuel.

20. The Non-Traditional Community College Project. *Survey of Postsecondary Youth and Adult Learning*, April, 1974.

21. Hartnett, _et al_.

22. Division of Program and Staff Development, University of Wisconson - Extension. _Background Information, Survey Report No. 5_, 1973

23. Hartnett, _et al_.

24. The Non-Traditional Community College Project.

25. Gould.

26. Gould. p.99.

27. Gould.

28. University of Mid-America. _Proposal to the National Institute of Education_, p.17, October, 1974.

APPENDIX A

1974 Market Survey Forms 1, 2, and 3

FIRST CLASS PERMIT
NO. 577
LINCOLN, NEBRASKA

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY:

STATE UNIVERSITY OF NEBRASKA
OFFICE OF RESEARCH AND EVALUATION
P. O. BOX 82446
LINCOLN, NEBRASKA 68501

College at Home

Dear Fellow Citizen:

Many adults want to continue their education in some form throughout their life. There are many reasons for doing so. And there are also a number of different ways in which you might continue your education.

We at the State University of Nebraska (SUN) want to provide more opportunities for you to learn and grow in a way most convenient for you. To accomplish this, we need to know more about what educational needs, interests, and opportunities exist among the people of Nebraska.

If you would take just a few moments to respond to the questions in this little brochure, you will be helping us plan our SUN educational program to best meet your needs. When you've completed the questions, please tape or staple the brochure so the return address is showing. No postage is necessary.

Thanks for your help.

Sincerely,

Dennis D. Gooler
Director
Research and Evaluation

Your age?

Under 20 . . ( ) 35-49 . . . ( )
20 - 34 . . ( ) 50-64 . . . ( )
65 or over. ( )

Your sex?

Male . . . . ( ) Female . . . ( )

Highest level education completed?

11th grade or less . . . . ( )
High school graduate . . . . . . ( )
Trade, business or technical school diploma. . . . .( )
1 - 3 yrs. college. . . . .( )
College graduate (4 yrs.) . . .( )
Graduate degree . . . .( )

Marital and family status?

Single . . . . ( )
Married, no children . . . . . . ( )
Married, with mostly young children . . . . ( )
Married with mostly grown children . . . . ( )
Widowed, divorced or separated . . . .( )

How many years has it been since you last participated in a college-level education experience?

Have not participated . . . . .( )
Within last year. . . . .( )
1 - 2 yrs . . . .( )
3 - 5 yrs . . . .( )
More than 5 yrs . . . .( )

Please indicate your main area of work by listing job title or duties.

____

Which best describes where you live?

Rural/farm . . . . ( )
Small town (2000 or less) . . .( )
Medium town (10,000 or so). . .( )
Larger town (20,000 or so). . .( )
City (more than 20,000) . . . .( )

If you were to participate in an educational activity, what major reasons would there be for you to do so? (Check (✓) all that apply.)

____To increase my current level of schooling

____To get to know other adults

____To become a better friend, spouse, or parent

____To prepare for a job or career improvement

____To increase my general knowledge

____To help me get more out of a hobby or interest

____To spend my leisure time in a worthwhile way

____To become a better person or citizen

____To satisfy my curiosity about a particular topic.

From what source(s) would you most likely obtain information about educational opportunities for yourself?

A friend, relative or neighbor . . .( )
Clergy . . . .( )
Teacher/educator . . . .( )
Employer . . . .( )
Newspaper/Magazine . . . . ( )
Radio/TV . . . .( )
Brochure, flier, or announcement . . . .( )
Extension Service . . . . ( )
Other ______________________________( )

If you were to engage in an educational activity which one of the following educational means would best suit your needs?

Local discussion group . . . . ( )
Evening Class. . . . . ( )
Correspondence study . . . . ( )
Conference or workshop . . . . ( )
Educational TV (ETV) . . . . ( )
Regular classes at a college or university . . . . ( )
Study on my own . . . . ( )
Other____________ . . . . ( )
(specify)

Where would you like to participate in an education experience? Rate each location.

Location	Satisfactory	No preference	Not satisfactory
In my home.	( )	( )	( )
At place of work. .	( )	( )	( )
A church	( )	( )	( )
Civic center. . . .	( )	( )	( )
YMCA	( )	( )	( )
Library	( )	( )	( )
Elementary school.	( )	( )	( )
High School. . . .	( )	( )	( )
Local College. . .	( )	( )	( )
University	( )	( )	( )
Learning center, if it existed near my home	( )	( )	( )
Museum, art gallery	( )	( )	( )
Shopping center. .	( )	( )	( )

Your age?

Under 20 . . ( ) 35-49 . . . ( )
20 - 34 . . ( ) 50-64 . . . ( )
65 or over. ( )

Your sex?

Male . . . . . ( ) Female . . . ( )

Highest level education completed?

11th grade or less . . . . ( )
High school graduate . . . . . . ( )
Trade, business or technical
school diploma. . . . .( )
1 - 3 yrs. college. . . . .( )
College graduate (4 yrs.) . . . .( )
Graduate degree . . . .( )

Marital and family status?

Single . . . . ( )
Married, no children . . . . . . ( )
Married, with mostly
young children . . . . ( )
Married with mostly
grown children . . . . ( )
Widowed, divorced or
separated . . . .( )

How many years has it been since you last participated in a college-level education experience?

Have not participated . . . . . .( )
Within last year. . . . .( )
1 - 2 yrs . . . .( )
3 - 5 yrs . . . .( )
More than 5 yrs . . . .( )

Please indicate your main area of work by listing job title or duties.

____

Which best describes where you live?

Rural/farm . . . . ( )
Small town (2000 or less) . . . .( )
Medium town (10,000 or so). . . .( )
Larger town (20,000 or so). . . .( )
City (more than 20,000) . . . . .( )

Which of the following areas would be most important to you if you were to take part in an educational activity (that is, lecture, course, educational television)?

____Regular school subjects

____Trade, business, or vocational subjects

____Public affairs and citizenship

____Home improvement and family living

____Hobbies, recreation, and leisure

____Community development

____Youth leadership work

____Agricultural subjects

Following are listed some practical topics that adults frequently are interested in studying about. Check those that are important to you. Feel free to suggest other topics.

____Child rearing	____Gardening
____Real estate	____Consumerism
____Photography	____Income tax/ Personal finances
____Interior design	____Home repair
____Metrics	____Nutrition
____Aging	____Investing
____Ecology	____Drug education
____Human relations	____Personal health
____ ______________ (specify)	____ ______________ (specify)

How do you feel you learn best? (Check one)

I need others to direct me. . . . . ( )

I can teach myself through
independent study. . . . .( )

I [illegible]

Rank each of the following learning sources according to which source you prefer to use in learning. The most preferred source should be given a "1" in the appropriate bracket, the second a "2", and so forth.

A book . . . .( )

Educational TV . . . .( )

A personal presentation
or group discussion . . . . . . ( )

Tape recording or record. . . . . ( )

A booklet, article, or pamphlet ( )

Radio . . . . ( )

In your opinion which two or three factors might prevent you from participating in more educational experiences?

____Inadequate personal finances

____Lack of motivation

____Family/job responsibilities

____Not enough time

____Lack of educational opportunities

____Inadequate previous educational preparation

____Lack of practical courses available

____Doubts about ability to do the work

____Other______________________________
(Specify)

In which of the following ways would you be most likely to continue your education?

____Taking college courses for credit toward a degree

____Taking college courses, but not for credit toward a degree

____Taking non-credit courses not [illegible] found in a college

Form 2

Your age?

Under 20 . . ( ) 35-49 . . . ( )
20 - 34 . . ( ) 50-64 . . . ( )
65 or over. ( )

Your sex?

Male . . . . . ( ) Female . . . ( )

Highest level education completed?

11th grade or less . . . . ( )
High school graduate . . . . . . ( )
Trade, business or technical
school diploma. . . . .( )
1 - 3 yrs. college. . . . .( )
College graduate (4 yrs.) . . .( )
Graduate degree . . . .( )

Marital and family status?

Single . . . . ( )
Married, no children . . . . . . ( )
Married, with mostly
young children . . . . ( )
Married with mostly
grown children . . . . ( )
Widowed, divorced or
separated . . . .( )

How many years has it been since you last participated in a college-level education experience?

Have not participated . . . . .( )
Within last year. . . . .( )
1 - 2 yrs . . . .( )
3 - 5 yrs . . . .( )
More than 5 yrs . . . .( )

Please indicate your main area of work by listing job title or duties.

Which best describes where you live?

Rural/farm . . . . ( )
Small town (2000 or less) . . . ( )
Medium town (10,000 or so). . . ( )
Larger town (20,000 or so). . . ( )
City (more than 20,000) . . . . ( )

If you were to participate in a college-level educational activity, which of the following would be of most interest to you? (Check (✓) one for each pair.)

____Practical or applied courses
____Theoretical courses

____Skill development emphasis
____Knowledge emphasis

____Credit
____Non-credit

To what extent do you feel you are aware of existing educational opportunities that would meet your needs and/or interests?

I am extremely well informed. . . . .( )

I am rather well informed . . . . . .( )

I am somewhat aware . . . .( )

I am rather uninformed . . . . ( )

I am absolutely uninformed . . . . . ( )

If you were to engage in a new educational activity, you would probably have to sacrifice, reduce, or replace something you now do. Which current activity would you likely spend less time on? (Check all that apply.)

Work . . . . . ( ) Religious . . . .( )

Hobbies. . . . ( ) Civic/political. ( )

Social . . . . ( ) Fraternal service( )

Recreational. .( ) Family or home . ( )

Leisure. . . . ( ) Other. . . . . . ( )

If a postsecondary education opportunity were available to you, which of the following academic areas would be most appealing to you?
(Check all that apply.)

____Business and Administration (accounting, sales, management, etc.)

____Engineering (electrical, civil, mechanical)

____Physical Science (physics, astronomy, chemistry)

____Education (elementary, secondary, adult)

____Health Professions (medicine, dentistry, pharmacy)

____Biological sciences (botany, ecology, zoology)

____Agriculture and Related Fields (soils, forestry, farming)

____Psychology (clinical, social, industrial)

____Social Sciences (economics, political, sociology)

____Humanities (fine arts, language, philosophy)

____Other Professional Fields (architecture, law, theology)

____Mathematics

Do you think you will participate in some type of academic course work in the next five years?

____Yes, I'm quite sure.

____Yes, I probably will.

____I can't say one way or the other.

____No, I probably won't.

____No, I won't.

Form 3

APPENDIX B

Student Information Questionnaire

THE UNIVERSITY OF NEBRASKA

STATE UNIVERSITY OF NEBRASKA PROJECT
P O BOX [illegible] LINCOLN NEBRASKA [illegible] PHONE [illegible]

Dear SUN Student:

The State University of Nebraska (SUN) is a non-traditional program designed to provide learning experiences for people in their own homes. As our first students, you and your friends and neighbors will be participating in a unique educational situation. The students and the courses are not encumpassed by the boundaries of a college campus. At the same time, you and other students will not have day-to-day personal contact with an instructor. These are advantages and limitations of SUN.

In order to provide you with an opportunity to tell us about your experience with SUN courses, we will be in touch with you several times throughout the course. This questionnaire is the first of our questions to you.

For the first experimental year of SUN we will be asking all students to complete the Student Information Questionnaire. We realize this is a long form and it may ask you a few personal questions. We request your cooperation in filling out and returning the questionnaire. If it is not possible for you to complete an item, please go on to the next item. ALL YOUR RESPONSES WILL BE HELD IN STRICTEST CONFIDENCE. Under NO circumstances will individual responses be reported to anyone. This information will be used only by the Office of Research and Evaluation to make revisions in present SUN courses and to make decisions about future SUN policies.

Your responses will tell us a great deal about the SUN student body. We need this information in order to make SUN offerings more relevant and useful to its students. It will help our staff to more effectively reach its goal to serve the educational needs of the Nebraska Community.

If you have any questions or comments, please feel free to call us or write your comments at the end of this form. We appreciate your help; thank you.

Cordially,

Dennis D. Gooler

Dennis D. Gooler
Director of Research
and Evaluation

I. GENERAL INFORMATION

1. **Name** ______________________________
Last First Middle

2. **Social security number** ___ ___ ___ - ___ ___ - ___ ___ ___ ___

3. **Present address** ______________________________
____

4. **Marital and family status:**

Single	☐	No children	☐
Married	☐	Mostly young children	☐
Widowed, divorced, etc.	☐	Mostly grown children	☐

5. **Have you ever served on active duty in the United States Armed Forces?**

Yes, am serving now	☐	No	☐
Yes, but not serving now	☐		

6. **How many years in total have you resided in Nebraska? (Mark one)**

Less than 1 year	☐	6-10 years	☐
1-5 years	☐	11 or more years	☐

7. **How many years have you resided at your present address? (Mark one)**

Less than 1 year	☐	6-10 years	☐
1-5 years	☐	11 or more years	☐

8. **How many states have you resided in (include Nebraska)?**
____

9. **How many countries have you resided in (other than U.S.)?**
____

10. **Which best describes the community in which you presently live?**

Farm or ranch	☐	Town (10,000-50,000)	☐
Town (under 2,000)	☐	City (50,000 or over)	☐
Town (2,000-10,000)	☐		

11. **What is the highest level of education attained by your parents or guardians and spouse?**

	Father	**Mother**	**Spouse**
11th grade or less	☐	☐	☐
High school graduate	☐	☐	☐
Trade, business or technical school diploma	☐	☐	☐
1-3 years of college	☐	☐	☐
College graduate	☐	☐	☐
Graduate study or professional degree	☐	☐	☐

12. **What was your total income last year? Consider annual income from all sources before taxes. (Check one)**

Less than $1,000	☐	$15,001-$20,000	☐
$1,001-$4,000	☐	$20,001-$30,000	☐
$4,001-$7,000	☐	$30,001-$40,000	☐
$7,001-$10,000	☐	$40,001 +	☐
$10,001-$15,000	☐		

II. EDUCATION

This section covers your previous education. It is important in planning for us to know what kind of educational background our students have.

13. **What is the highest level of education you have completed? (Check one)**

11th grade or less	☐
High school graduate	☐
Trade, business or technical school diploma	☐
1-3 years college	☐
College graduate (4 years)	☐
Graduate study	☐

14. **How many years has it been since you last participated in a formal educational experience?**

Within past year	☐	Between 3-5 years ago	☐
Between 1-2 years ago	☐	5 years or more ago	☐

Please describe briefly the last formal educational experience you participated in.

III. WORK

This section covers your present job, if you are now working, and the demands it makes on your time. We need to know more about our students' careers since many SUN students are probably planning to use their courses for career advancement or career changes.

15. **How many hours per week do you work? (Include a second job or regular overtime.)**

Does not apply	☐	31 to 40 hours	☐
10 hours or less	☐	41 to 50 hours	☐
Between 11 and 20 hours	☐	Over 50 hours	☐
21-30 hours	☐		

16. **How many years have you worked at your present job?**

17. **Please rank your satisfaction with your present job?**

Very satisfied	☐	Somewhat dissatisfied	☐
Satisfied	☐	Very dissatisfied	☐
Neutral	☐		

IV. LEISURE TIME

18. **What are your main leisure time activities and interests? Mark approximately how often you participated in these activities during the last year.**

	Never	**Rare**	**Occasionally**	**Frequently**
Reading newspapers, magazines and journals	☐	☐	☐	☐
Reading fiction and non-fiction books	☐	☐	☐	☐
Indoor activities: chess, poker, ping-pong	☐	☐	☐	☐
Outdoor activities: hiking, hunting, swimming, golf, camping	☐	☐	☐	☐
Attending movies, concerts, plays, sports events, etc.	☐	☐	☐	☐
Participating in plays, concerts, sports events	☐	☐	☐	☐
Arts and handicrafts, painting, woodworking, sewing, photography, etc.	☐	☐	☐	☐
Traveling	☐	☐	☐	☐
Visiting with friends, relatives	☐	☐	☐	☐
Participating in church and community activities (other than sports)	☐	☐	☐	☐
Taking special interest classes (i.e., cooking, woodworking, tennis, etc.)	☐	☐	☐	☐

19. **What types of newspapers and magazines do you read regularly? (Check all that apply)**
Daily newspapers [ ]
Local weekly newspapers [ ]
News and business magazines [ ]
Career or professionally-oriented magazines and journals [ ]
Special interest magazines (i.e., sports, fashions, gardening, etc.) [ ]
Other ______________________ [ ]
(Please list)

20. **Estimate the number of hours you watched television in the past week?**
None [ ]
3 hours or less [ ]
4-7 hours [ ]
8-11 hours [ ]
12-15 hours [ ]
16-19 hours [ ]
20-23 hours [ ]

21. **What types of television programs do you prefer? (Check all that apply)**
Sports programs [ ]
News reports [ ]
Drama/plays [ ]
Detective, mystery and western series [ ]
Situation comedy, comedy series [ ]
Religious programs [ ]
Music and variety shows [ ]
Serious talks, discussions, interviews, including documentaries [ ]
Adult education programs [ ]
Quizzes and games [ ]

22. **What is your favorite television program?**

____

23. **Please list all voluntary programs or civic organizations in which you have participated in the past few years. (e.g., fire department, church activity or auxiliary groups, school board, little league).**

Program or Organization

If you held an office, please name it below.

V. RESOURCES

The following questions ask about the resources (time, money, space, etc.) you have. How do you think the resources or lack of them will affect your success with SUN courses? These questions are designed to provide information to help us in planning future SUN courses.

24. **Finding the money to pay for tuition and materials for a SUN course is:**
A severe hardship [ ]
Quite difficult [ ]
Reasonably easy [ ]
No problem [ ]

25. **Apart from tuition do you think taking the course is likely to involve you in any significant, additional expenses? (Please respond to each item)**

	Very [illegible]	Somewhat [illegible]	Not [illegible]	Not Certain
Loss of overtime	[ ]	[ ]	[ ]	[ ]
Stopping or reducing paid part-time work	[ ]	[ ]	[ ]	[ ]
Cost of babysitting	[ ]	[ ]	[ ]	[ ]
Cost of books and materials	[ ]	[ ]	[ ]	[ ]
Traveling	[ ]	[ ]	[ ]	[ ]
Other ________	[ ]	[ ]	[ ]	[ ]

26. **What are your sources of financing for your SUN course? (Please respond to each item.)**

	Major Source	Minor Source	Not a Source
Full and/or part-time work	[ ]	[ ]	[ ]
Savings	[ ]	[ ]	[ ]
Parental aid	[ ]	[ ]	[ ]
Employer support	[ ]	[ ]	[ ]
Spouse's income	[ ]	[ ]	[ ]
Grants/Scholarships	[ ]	[ ]	[ ]
Loans	[ ]	[ ]	[ ]
Other ______________ (please specify)	[ ]	[ ]	[ ]

27. **Which of these do you own or have easy access to? (Check all that apply.)**
Transportation [ ]
Record player [ ]
Tape recorder (cassette type) [ ]
Tape recorder (reel to reel) [ ]
Slide projector/viewer [ ]
Typewriter [ ]
Telephone [ ]
Television [ ]
None of these [ ]

28. **Do you plan to make any special arrangements to enable you to take a SUN course? (Check all that apply.)**
Rearrange working hours/duties [ ]
Reorganize time to allow for studying [ ]
Arrange for child/baby sitting [ ]
Arrange to record missed programs [ ]
Turn one room into study/quiet room [ ]
Special arrangements to watch TV/bought TV [ ]
Other arrangements (write in) [ ]

29. **What are the most convenient days and times for you to watch television broadcasts and which would you, as far as you can say, find decidedly inconvenient.**

Weekdays:

Do not mind what time ☐

	Convenient	**Inconvenient**
Before 8:00 a.m.	☐	☐
8:00 a.m.–9:00 a.m.	☐	☐
9:00 a.m.–12:00 noon	☐	☐
12:00 noon–1:00 p.m.	☐	☐
1:00 p.m.–4:00 p.m.	☐	☐
4:00 p.m.–5:00 p.m.	☐	☐
5:00 p.m.–6:30 p.m.	☐	☐
6:30 p.m.–7:30 p.m.	☐	☐
7:30 p.m.–9:30 p.m.	☐	☐
9:30 p.m.–10:30 p.m.	☐	☐
10:30 p.m. or later	☐	☐

Weekends:

Do not mind what time ☐

Before 8:00 a.m.	☐	☐
8:00 a.m.–9:00 a.m.	☐	☐
9:00 a.m.–12:00 noon	☐	☐
12:00 noon–1:00 p.m.	☐	☐
1:00 p.m.–4:00 p.m.	☐	☐
4:00 p.m.–5:00 p.m.	☐	☐
5:00 p.m.–6:30 p.m.	☐	☐
6:30 p.m.–7:30 p.m.	☐	☐
7:30 p.m.–9:30 p.m.	☐	☐
9:30 p.m.–10:30 p.m.	☐	☐
10:30 p.m. or later	☐	☐

30. **In studying with SUN, which of the following are major concerns for you?**

	Major	**Minor or None**	**Don't Know**
Work pressures and responsibilities	☐	☐	☐
Domestic interruptions and demands	☐	☐	☐
Lack of personal contact with teachers	☐	☐	☐
Lack of personal contact with other students	☐	☐	☐
Self-discipline: getting down to regular work	☐	☐	☐
Academic and learning problems: starting to study again, new methods, concentration, memory, etc.	☐	☐	☐
Program pace: keeping up with the SUN schedule	☐	☐	☐
Lack of time and energy	☐	☐	☐
Personal disability	☐	☐	☐
Obtaining books and materials	☐	☐	☐
Other ______________	☐	☐	☐

31. **List the greatest concern you have in studying with SUN.**

32. **Do you have space available at home where you can study quietly if you wish? (Check one)**

Yes, at all times ☐
Yes, in daytime only ☐
Yes, but only after children have gone to bed ☐
No, plan to study at public library ☐
No, plan to study at work ☐
No, plan to study at Learning Center ☐
No, don't know yet where I will study ☐
Other plans ☐

33. **Given your other responsibilities (job, marriage, family etc.), how difficult do you think it will be for you to "keep up" with the SUN course(s)? (Check one)**

I can do what I have to do rather easily ☐
Taking a SUN course(s) will require some effort ☐
Taking a SUN course(s) will require a very substantial effort ☐
I am concerned I may not be able to do all the things planned ☐
Other ______________ ☐
(Please specify)

34. **How do your family, friends and employer feel about your enrollment in SUN? (Check one for each group)**

	Family	**Friends**	**Employer**
Strongly encouraging	☐	☐	☐
Somewhat encouraging	☐	☐	☐
Neutral	☐	☐	☐
Somewhat discouraging	☐	☐	☐
Strongly discouraging	☐	☐	☐
Don't know	☐	☐	☐

VI. GOALS

What are your immediate and long-range goals for yourself? Please consider these questions carefully since your answers will be used as guides to future roles SUN might play in helping its students.

35. How important is it that you achieve the following goals by studying with SUN? (Please respond to each item)

	Not Important	Somewhat Important	Very Important
a. To increase my appreciation of art, music, literature and other cultural expressions.	☐	☐	☐
b. To discover my vocational interests	☐	☐	☐
c. To develop a new career	☐	☐	☐
d. To become involved in social and political concerns	☐	☐	☐
e. To attain specific skills that will be useful on a job.	☐	☐	☐
f. To increase my awareness of different philosophies, cultures and ways of life.	☐	☐	☐
g. To improve my chances of making more money	☐	☐	☐
h. To obtain a degree which is required for my present or future job.	☐	☐	☐
i. To learn how to participate effectively as a citizen in my community	☐	☐	☐
j. To develop an understanding and an appreciation of science and technology	☐	☐	☐
k. To improve my self-image	☐	☐	☐
l. Simply, to learn.	☐	☐	☐
m. To improve my professional status	☐	☐	☐
n. To increase my confidence to undertake learning projects.	☐	☐	☐
o. To use leisure time creatively.	☐	☐	☐
p. Other ______________ (please specify)	☐	☐	☐

36. Which one of the goals in question 35 is the most important to you?

37. What is the highest academic degree you hope to obtain? (Check one)

None ☐
Associate degree (A. A. or equivalent) ☐
Bachelor's degree (BA, BS, etc.) ☐
Master's degree (MA, MS, etc.) ☐
Doctor of philosophy or education (PhD or EdD) ☐
Medical degree (MD, DDS, etc.) ☐
Law degree (LL. B., JD) ☐
Theological degree ☐
Other ______________ ☐
(Please specify)

VII. ENROLLMENT

In order to plan future courses and reach new students, we need to know more about how you found out about SUN and why you chose to take a SUN course.

38. Is anyone else in your family presently registered as a student in SUN?

Husband/wife	☐	Brother/sister	☐
Mother/father	☐	Other relatives	☐
Son/daughter	☐		

39. How did you find out about SUN? (Check as many as are applicable)

From a SUN student ☐
From someone who works for SUN ☐
From someone who works for another college or university ☐

From a newspaper advertisement ☐
From a news article in a newspaper ☐
From a television advertisement ☐

From a television program ☐
From a radio advertisement ☐
From a radio program ☐

From reading a SUN brochure ☐
From a SUN poster ☐
From a high school or college counselor ☐

From my employer ☐
From a friend or family member ☐
Other ______________ ☐
(Please specify)

40. **Please indicate the importance of the following influences on your enrolling with SUN.**

	Not Important	Somewhat Important	Very Important
The good reputation of University of Nebraska	[ ]	[ ]	[ ]
I have friends at SUN	[ ]	[ ]	[ ]
Another SUN student recommended it	[ ]	[ ]	[ ]
The independence allowed by SUN	[ ]	[ ]	[ ]
My employer suggested I take SUN courses	[ ]	[ ]	[ ]
I can work as well as study with SUN	[ ]	[ ]	[ ]
A counselor recommended SUN	[ ]	[ ]	[ ]
A member of my family suggested I enroll	[ ]	[ ]	[ ]
I wanted to live at home while attending college	[ ]	[ ]	[ ]
Other ______________ (Please specify)	[ ]	[ ]	[ ]

41. **Which of the above information affected your enrollment the MOST?**

Please write any comments you may have

Thank you very much for responding to this questionnaire.

APPENDIX II A

THOUGHTS ON LEARNING EFFECTIVENESS

ABSTRACT: Thoughts on Learning Effectiveness Comparison Studies

by

Dennis D. Gooler

The author questions the intent and viability of comparison studies which attempt to assess learning effectiveness. Is the intent of comparison studies to help curriculum developers who want explanations of why something does what it does, or is the intent to help curriculum selectors choose from among alternative curricula? The author argues that the primary purpose for conducting comparison studies within the SUN program is to inform curriculum selection efforts, not to revise specific courses. In general terms, this means that comparison studies should seek to determine what works best, for whom, and under what conditions. More specifically, comparison studies should attempt to identify teaching and learning variables which are most critical, to examine alternative forms or structures of those variables, and to predict optimum states of those variables with the SUN program.

The viability of learning effectiveness comparison studies is dependent on answers to both conceptual and methodological questions. One critical question is the basis upon which comparisons are to be made, e.g., student achievement, appeal, retention of learning, difficulty, transportability, etc. A second major question is the course characteristic to focus on. Comparison studies could focus on such course characteristics as developmental approach, format, content, and/or goals. It is recommended by the author that UMA-SUN concentrate on logitudinal studies which attempt to compare course characteristics and impact on learners. The results of such studies should help to select curricula which optimize the intended outcomes.

S-U-N
Office of Research and Evaluation
April, 1974

THOUGHTS ON LEARNING EFFECTIVENESS COMPARISON STUDIES

Dennis D. Gooler

One of the NIE work statements (Work Assignment 2) for 1974 concerns the development of a plan "for the use and evaluation (including cost and learning effectiveness comparison studies)" of a variety of approaches to courseware development. A number of questions might be posed as to the intent and viability of that work statement. While similar questions might be raised about the cost elements of the work statement, this paper focuses upon the learning effectiveness concerns of that statement.

It is first reasonable to ask about the purposes for planning and conducting comparison studies of the kind implied by the work statement. To answer this question requires clarification as to whether the intent is to understand why a given curriculum or course does what it does, or to choose from among alternative curricula. Cronbach (1963), for example, criticizes the comparative method of evaluation:

> In an experiment where treatments differ in a dozen respects, no understanding is gained from the fact that the experiment shows a numerical advantage in favor of the new course. No one knows which of the ingredients is responsible for the advantage.

Scriven (1967), however, looks at the issue from a different perspective. He argues that

> understanding is not our only goal in evaluation. We are also interested in questions of support, encouragement, adoption, reward, refinement, etc. And these extremely important questions can be given a useful though in some cases not a complete answer by the mere discovery of superiority.

Glass (1972) argues that Scriven and Cronbach are speaking at cross purposes here. For the curriculum *developer*, the question of explanation, or why something does what it does, is of critical importance. To the curriculum *selector*, however, comparative data showing the relative effectiveness of competing courses or curricula may be of much greater usefulness for the kinds of decisions he must make. As a conclusion to his remarks, Glass makes the following observation:

> The message here is that the curriculum developer wants to know how and why his materials function as they do and that he will not make good use of comparative data. However, comparative evaluation at some level is necessary. The anarchist who opposes all comparisons of curricula in favor of determining which objectives are met by which students and why, has forgotten that an implicit comparison is present in establishing the objectives of any curriculum. No one is foolish enough to establish the objective for a curriculum in typing of "typing 10 words per minute with no more than 5 mistakes" because existing curricula are already superior to this. At some point in the evaluation of a curriculum these implicit comparisons must be revealed and subjected to a test.

Where does S-U-N fit into all of this? At the most general level, S-U-N might consider conducting comparison studies to determine what works best, with whom, and under what conditions. More specifically, S-U-N is interested in identifying those variables in teaching and learning which are most critical, and to examine alternative forms or structures of those variables in an effort to predict optimum states of those variables within the S-U-N program. This identification would potentially lead to maximum instructional effectiveness, while minimizing untoward side effects, such as excessive cost or negative learner affect. In essence, S-U-N is faced with both the curriculum development problems and the curriculum selection problems alluded to by Glass.

It is possible to ask questions about effectiveness *within* a given course: were the course objectives realized? Did students learn what was intended?

In short, did the course work? Comparative studies introduce another dimension: Did (or will) Course A work as well as, better, or worse than Course B? Comparison requires that a given course be analyzed in terms of or in relation to another course, not exclusively in terms of its own intents. S-U-N may pursue both comparative and non-comparative studies: the intent of those studies must be clearly understood at the outset.

I would argue that the primary purpose for conducting comparison studies within the S-U-N framework is to inform future selection efforts, not to revise or modify the specific courses being compared. That is, I believe that the things learned from certain comparison studies will be instrumental in developing guidelines for either selecting and adapting extant courses for the S-U-N curriculum, or selecting instructional techniques or objectives for future S-U-N courses.

While many conceptual and methodological questions might be raised concerning comparative studies, one stands out as critically important: on what basis shall comparisons be made? Shall courses be compared on the basis of relative student achievement? On cost? On appeal? On retention of learning? On ease of administration? On difficulty? On transportability? Each of these kinds of outcomes is significant, and may be important for different purposes. What is essential in any comparative study is some agreement upon the criteria, or variables, whereby the courses being compared are to be analyzed and subsequently judged. Most often, comparative criteria will be multiple. Student achievement has always been regarded as a paramount criterion, but other criteria may be equally important, depending on the purpose for making the comparison.

Given this brief background, it is possible to describe at least four ways in which comparison studies in S-U-N might be conceptualized:

1. Holding the content and goals of a given course constant, and also agreeing upon a relevant outcome measure appropriate for all forms of the course, it is possible to vary developmental approach. For example: Suppose S-U-N wishes to create a course in introductory sociology. If the basic goals and objectives for that course are agreed upon as appropriate to the course, it is possible to compare different developmental versions (See Appendix A) of the course with respect to learner achievement. In so doing, it would be possible to suggest which of the course types seemed to produce the greatest learning. It would not be possible to identify which of the elements of a given course type was responsible for differences in achievement, but it would be possible to specify which type, in the aggregate, seemed to work best, according to the achievement variable. The inability to describe in very precise terms the cause of differentiated outcomes (for example, was it the inclusion of high quality, high cost color television segments that made the difference?) might render this kind of comparative study less than useful, until or if a series of such studies pointed up the consistent advantage of a certain course type.

2. A second kind of comparative study would hold constant the content and objectives of a course, as well as the criterion measure, but would vary the format or structure of the course. For example: suppose the content was in economics, course goals were agreed upon,

and an achievement examination was developed to the satisfaction of those involved. Several versions of the course were then prepared, in which: in one version, learners read the text, then viewed the television, then worked a series of problems, then utilized audio cassettes. In another version, learners first viewed the television segment, then worked problems, listened to the audio tape, and finished by reading the text. Still another version might be prepared, with another instructional sequence. Students in each version are tested, and the results compared.

It is also possible to conduct attrition comparison studies. That is, a complete course might be developed, containing all of the elements potentially part of a S-U-N course (television, audio tapes, syllabus, work books, computers, etc.). In one version the entire course, with all elements, is offered to learners. In a second version, one or more of the elements is deleted. Achievement results are compared in an effort to find out which aspects of a given course appear to contribute to learning outcomes.

There are a number of other comparisons of this kind that might be made. The use of authority figures, for example, might be explored. Embedded testing might be examined. Each of these kinds of comparative studies would be conducted in an effort to isolate the nature and kind of instructional elements that seem to make a difference in learning outcomes. This kind of study appears to be a unique application of the notion of comparison.

3. There is a third kind of comparative study that might be conducted, in an attempt to understand the relationship between a particular course format, and the content to which it is addressed. That is, holding course format constant, and varying content, do differential learning outcomes occur? For example: in a carefully prescribed program of individualized instruction, in which various elements appear in the same order in all versions of the course, does some content appear more amenable to that format than does other content? Will the particular course format work in biology, for example, but not in psychology? The difficulty here, of course, is that achievement or criterion measures are not held constant across courses. It is then difficult to directly compare achievement in biology to achievement in psychology. It may well be that criteria other than achievement will be appropriate in such studies. These observations lead to a fourth kind of comparative study.

4. It may be possible to describe each of a number of course types (different content, different pedogogy, etc.), and to document the extent to which each achieves the objectives stated or appropriate to that course. Course types may thus be "compared" with respect to the extent to which each is successful in accomplishing its ends. Glass has addressed this possibility:

> Carroll claimed that curricula do not ordinarily have identical objectives and that to compare them raises philosophical problems about the comparative worth of different objectives. The choice between two competing curricula with greatly different objectives cannot help but raise philosophical questions, or ethical questions, or at least questions of the relative worth of certain values held by a society. Anyone who must make decisions

> affecting the adoption of curricula or innovative activities for a school is faced with resolving just these questions. I doubt that such questions can be adequately resolved and a rational decision mode unless empirical data are gathered which show how well a curriculum attains its own objectives, the objectives of competing curricula, and certain cross-curricular objectives.

Such a comparative approach may require the least amount of obtrusiveness or technical preparation, but would also require the greatest amount of inference in its conclusions. This kind of comparison is possibly most conducive to naturalistic study, to be conducted within limited resources.

APPENDIX II B

AN ECONOMIC ANALYSIS OF
THE UMA-SUN OPEN LEARNING SYSTEM

AN ECONOMIC ANALYSIS OF THE UMA-SUN OPEN LEARNING SYSTEM

PREPARED FOR

THE SUN PROJECT
UNIVERSITY OF NEBRASKA

BY

THE ESMEE FAIRBAIRN ECONOMIC RESEARCH CENTRE

SEPTEMBER 1, 1974

AN ECONOMIC ANALYSIS OF THE UMA-SUN OPEN LEARNING SYSTEM

1. AN ECONOMIC APPROACH TO PLANNING AN OPEN LEARNING SYSTEM.

1.1. Optimization

Economic analysis is fundamentally concerned with problems of optimal decision making. Typically the decision maker will have control over certain variables (decision variables) and through this control can influence other variables (target variables) in which he is interested. In deciding what values to choose for the decision variables, the decision-maker must know three things. First, he must know how to rank alternative possible outcomes for the target variables. That is, he must have well defined objectives with respect to the variables he is ultimately trying to influence. Second, he must know how changes in the decision variables will affect the target variables. That is, he must have information about the functioning of the economic system in which he operates. Third, he must know what range of values for the decision variables are feasible or permissible. That is, he must take into account any resource or institutional constraints that limit his choice.

For the planners of an open learning system (OLS) the target variables presumably include such items as the number of students enrolled in OLS courses, the value to them of taking such courses, and the costs incurred in offering courses and enrolling students. The decision variables might include the number, quality and subject matter of courses offered as well as the tuition and fees to charge students who enroll. Since the UMA-SUN OLS is a public institution it is assumed that its objective is the maximization of net social product defined to be the difference between the total benefits derived by society and the total costs borne by society as a consequence of the OLS's operations. Note that maximization of net social product is not the same as, and does not necessarily imply, maximization of student enrollment in the OLS, or maximization of the quality of its programs, or minimization of the OLS's financial deficit. As will be seen below, however, a decision which maximizes net social product will have definite implications for the optimal enrollment in the OLS, the optimal quality of its programs and the optimal government subsidy. Given this objective, the OLS planners need to determine how benefits and costs can be measured and also how benefits and costs will be affected by changes in decision variables such as the number and quality of courses offered. Finally, any limitations on student enrollment, tuition and fees, financial deficit, etc., which constrain planners in their choice of values for decision variables must be taken into account.

In order to see how this cost-benefit framework can be applied, consider an OLS which offers one course each year in which any person can enroll. Suppose that the annual total social benefit depends on the number of persons enrolled per year in the following way: the higher enrollment is, the greater is total benefit, but the smaller is marginal benefit. (Marginal benefit is the extra benefit which results from a unit increase in enrollment.) Assuming that benefit can be measured in dollar terms, the relationship between enrollment and benefit can be depicted as shown in Figures 1.1 and 1.2.

Figure 1.1

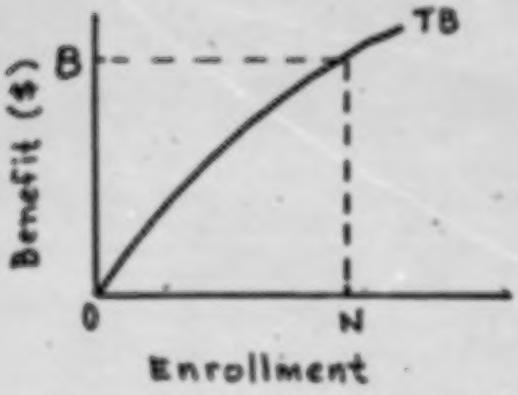
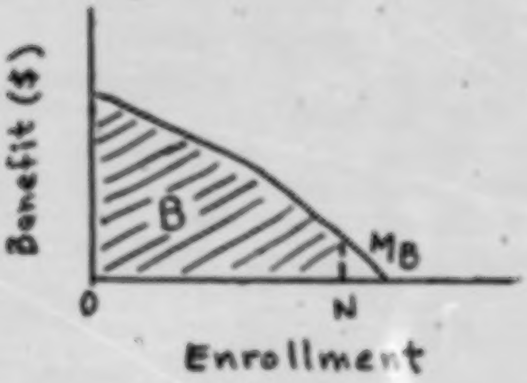


Figure 1.2



This relationship is such that the height of curve TB at any enrollment level in Figure 1.1 is equal to the area under curve MB up to the same enrollment level in Figure 1.2. For example, for enrollment N, the total benefit indicated by the height B of curve TB in Figure 1.1 is equal to the shaded area B in Figure 1.2.

Now suppose that there are two types of social cost involved in offering the course: fixed costs which are independent of the number of students enrolled[1] and variable costs which increase with enrollment.[2]

---

[1] Items which are fixed costs are the interest and depreciation on the capital investment embodied in the course and any overhead administration, etc.

[2] Items which are variable costs are books, grading, registration, counselling, etc.

The relationship between cost and enrollment is shown in Figures 1.3 and 1.4.

Figure 1.3

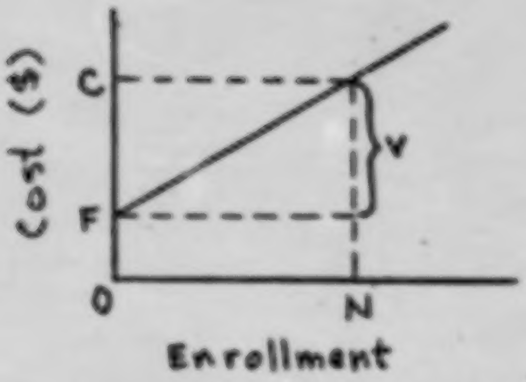
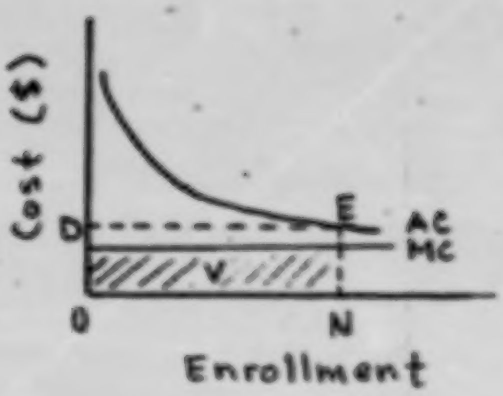


Figure 1.4



At enrollment N, the total cost is indicated by the height of curve TC in Figure 1.3 which is equal to the sum of the fixed cost and the variable cost. The marginal cost, i.e., the increase in cost associated with a unit increase in enrollment, is shown by curve MC in Figure 1.4. MC is a horizontal line because it is assumed that student cost is proportional to enrollment. The area V under curve MC up to enrollment level N in Figure 1.4 is equal to the total variable cost V which equals total cost C minus fixed cost F for enrollment level N in Figure 1.3. The average cost per student is shown by curve AC in Figure 1.4. This curve includes both average fixed and average variable cost. It has a negative slope because the average fixed cost decrease as enrollment increases and given the assumption of constant marginal cost, the AC curve lies above MC for all levels of enrollment and asymptotically approaches the MC curve as N increases. By definition, for any enrollment level, TC = AC x N. For example, the total cost C in Figure 1.3. is equal to the area ODEN (average cost D times enrollment N) in Figure 1.4.

By considering benefit and cost in the same diagram it is possible to determine whether this simple OLS should be established and if so what level of enrollment is optimal. In Figures 1.5 and 1.6 these questions are considered for the simple one course example.

Figure 1.5

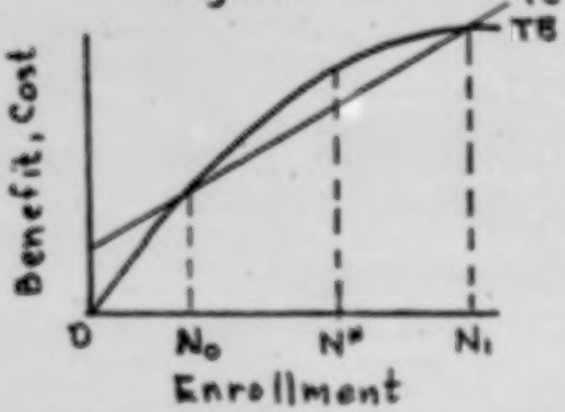
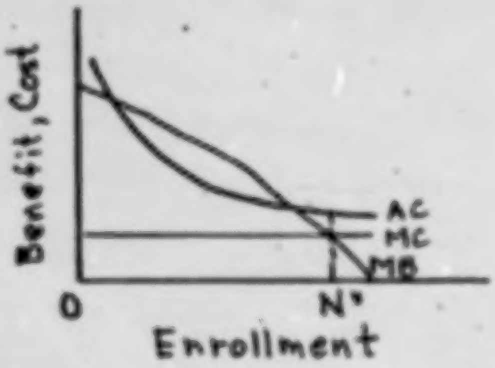


Figure 1.6



For this case it makes economic sense to establish the OLS because there exists a range of enrollment levels, from N_0 to N_1, where the net social product is positive. Furthermore, the enrollment level N^* results in the maximum possible net social benefit. It is instructive to observe that at the optimal enrollment, i.e., where the vertical distance between TB and TC in Figure 1.5 is maximum, the MB and MC curves in Figure 1.6 intersect. This makes good economic sense because for any enrollment less than N^*, where MB is greater than MC, an increase in enrollment will increase TB more than TC. Similarly, for any enrollment greater than N^*, a decrease in enrollment would subtract more from TC than from TB. Because of the equivalence of maximizing the difference between total benefit and total cost and equating marginal benefit and marginal cost, it is possible to determine the optimal enrollment from information on either total or marginal benefits and costs. It should also be noted for future reference that while the AC curve may lie below the MB curve for some enrollment levels, it will lie above the MB curve at the optimal enrollment.

1.2. Defining and Measuring Social Benefit

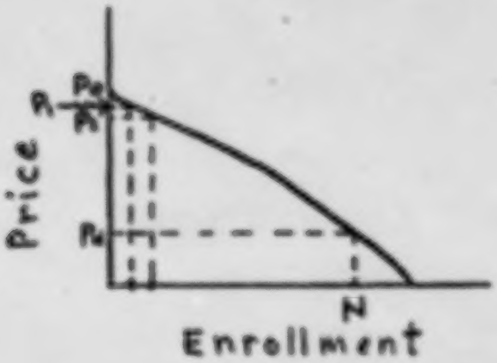
In order to apply the basic framework outlined above it is necessary to be able to measure in dollar terms the social benefit associated with different levels of enrollment. Under some circumstances such measurement may in fact be made. The main issue here is whether higher education is like most other goods in the sense that (1) total social benefit is equal to the sum of the private benefits that accrue to the individual students enrolled in higher education and (2) individual students know as well as anyone else what are the benefits of higher education and are capable of making rational decisions about whether to enroll. If higher education, like many goods, does not have any significant external benefits[3] and individual students (or their parents) can best decide for themselves how much and what kind of higher education to consume, then, as will be shown below, it is possible to estimate the benefits to society of a course of given quality, subject, etc., from information about the relationship between the amount of enrollment and the price (tuition and fees) charged for enrolling.

---

[3] A good has an external benefit when persons other than the individual consumer purchasing the good are benefited by his consumption of it. For example, if your having a college degree makes you a better neighbor, then your neighbor receives benefits from your higher education without having had to pay for it. In this case there would be an external benefit from higher education. The total benefit to society would equal your private benefit plus your neighbors' benefit.

If an individual chooses to enroll in a course for which he has to pay a given fee and if he is behaving rationally, the presumption must be that the expected value of the benefits to him is at least as great as the course fee. Consequently, if there are no external benefits, the total and marginal social benefit for different enrollments can be calculated from the course demand curve, which indicates the number of students that would enroll for each possible course fee or price. An example of such a relationship is shown in Figure 1.7. Its negative slope indicates that the lower the price, the more students will choose to

Figure 1.7



enroll. For any course fee greater than P_0, no students will enroll which indicates that no one values the benefits from taking the course to be greater than P_0. At price P_1, one person would enroll which indicates he values the benefit of the course to be greater than P_1 but less than P_0. At P_2, two persons would enroll, with the second person valuing the benefits of the course between P_1 and P_2. Similarly, at P_N, N persons would enroll with the Nth person valuing the benefits to be approximately P_N. Consequently, the sum of the maximum prices the N persons would be prepared to pay to enroll in the course would be the total benefit derived from the course with this enrollment. This sum is simply given by the area under the demand curve between 0 and N. Furthermore, the price that the Nth person would be willing to pay indicates the marginal benefit for enrollment of N. This price is simply the height of the demand curve at enrollment N.

It is possible, then, by estimating the demand curve for a given course, to approximate the total and marginal social benefits of the course for different possible enrollments under the assumptions that there are no external benefits from the course and that students make rational decisions about enrollment. If these assumptions are valid, the simple framework presented in the preceding section can be readily used to make decisions about an OLS. Even if these assumptions do not hold, this framework can be applied if a value can be assigned to the external benefit associated with an individual's enrolling in a college level course or if some judgment can be made on the extent to which students undervalue the benefit to them of higher education. There is no escaping the fact, however, that it is necessary to quantify the amount of external benefit or miscalculation by students of private benefit if decisions about the OLS are to be made on a rational basis. If quantification can take the form of a statement as to how much the enrollment of an individual in a college level course is worth to society over and above its worth to the individual and the amount by which an individual student underestimates the private return from taking such a course, then an appropriate government policy would be to provide a subsidy per student enrolled to the OLS equal to the sum of these two amounts. Then the OLS, in its cost benefit analysis, could replace the private demand curve with a social demand curve which is a vertical displacement of the private demand curve by the amount of the per student subsidy. The social demand curve would reflect the private benefits as perceived by individual students and any social benefits not taken into account by individual students.

1.3. Defining and Measuring Social Cost

Rational decision-making is as dependent on the availability of accurate cost estimates as it is on the availability of accurate benefit estimates. However large may be the benefits of any alternative, it is impossible to judge its desirability--i.e., its net social product--without knowing how much it will cost. In order to compare the net social products of alternatives, no matter how much they may vary in terms of social benefit, it is necessary to know how these alternatives differ with respect to cost. Furthermore, for different decisions it is essential to distinguish between different cost concepts and also different cost components.

One conceptual issue that arises in the context of cost accounting of a public institution relates to the distinction between private and social cost. In calculating the profit of a private firm, the only relevant costs are private costs, namely, those which are borne by the firm itself. For some firms, there may well be substantial costs imposed on society which are not paid for by the firm. The smoke emitted by an electric power plant is a familiar example. And, as the prevalence of air pollution as a national problem makes clear, the difference between social cost and private cost may be very significant. In the context of an institution of higher learning, there are not likely to be significant external costs such as air pollution. Nevertheless, there may be substantial costs to society for which the institution may not have to make payment. For example, an OLS may not be required to pay for space provided to it by another academic institution. Or, it may not have to pay for the costs of television transmission on the public network. But in assessing the cost of the OLS for the purposes of deciding whether it should be established or how it should be operated, these costs are relevant to the decision.

The problem of measuring the cost to society of the OLS using facilities for which it is not charged an appropriate use fee or rental raises another conceptual distinction, the difference between opportunity cost and cash outlays. When an input into the production process has alternative uses the cash outlay required to obtain that input may not be the best measure of cost to use. Rather the value of the alternative opportunity forgone—i.e., the opportunity cost—would be the correct measure to use. Consider again the cost to society of using the public television network to transmit OLS courses to students. If there are no television programs which the network would otherwise transmit, then the cost to society of transmitting the OLS course would simply be the extra labor, materials, electric power, etc., incurred in the transmission. If offering the OLS course required the network to drop a popular program from its schedule, then the cost to society would be the opportunity cost of having to do without the regular program, which might exceed substantially the cash costs of actually transmitting the OLS course.

One application of the concept of opportunity cost that is used in economic analyses of higher education involves the cost of student time used in attending class and studying. In the context of a full-time residential college, a student is usually required to forego the earnings he could obtain from full-time employment. From the student's point of view this is a real cost of his education even though it does not involve a cash outlay on his part to acquire the education. In assessing the desirability of attending college the opportunity cost of foregone earnings is an important factor for the student to take into account. Even for students who attend college on a part-time basis at a time which does not interfere with his regular working hours, there is the opportunity cost of leisure foregone. In fact, if the student were to allocate his time between work and leisure optimally, the costs to him of an hour of leisure foregone would be as much as the cost to him of the foregone income from an hour's work. Fortunately, this consideration is one that need not concern the educational planner unless he is considering requiring enrollment by law. As long as the enrollment decision is left for the student to make, it would be prudent to trust his judgment as to whether the benefits of enrolling in an OLS course were sufficiently great to cover his opportunity costs. Furthermore, any advantage that an OLS might have in reducing the opportunity cost to students through greater flexibility in timing and location would be reflected in student demand for enrollment. Consequently, in estimating the cost structure it is sufficient to concentrate exclusively on instructional costs and ignore the opportunity costs of students' time.

In order to ensure that the search for optimal values of the decision variables fully takes in account the structure of instructional costs, it is essential to distinguish between fixed and variable costs. As was discussed in Section 1.1, fixed costs are those costs incurred in maintaining and operating an organization which do not change as the scale of operation changes. As a consequence, while fixed costs are important when deciding about whether to establish an OLS, they are ordinarily irrelevent to decisions about the numbers of courses to offer and students to admit. Given that the OLS is in existence, it is variable costs which are of overriding importance.

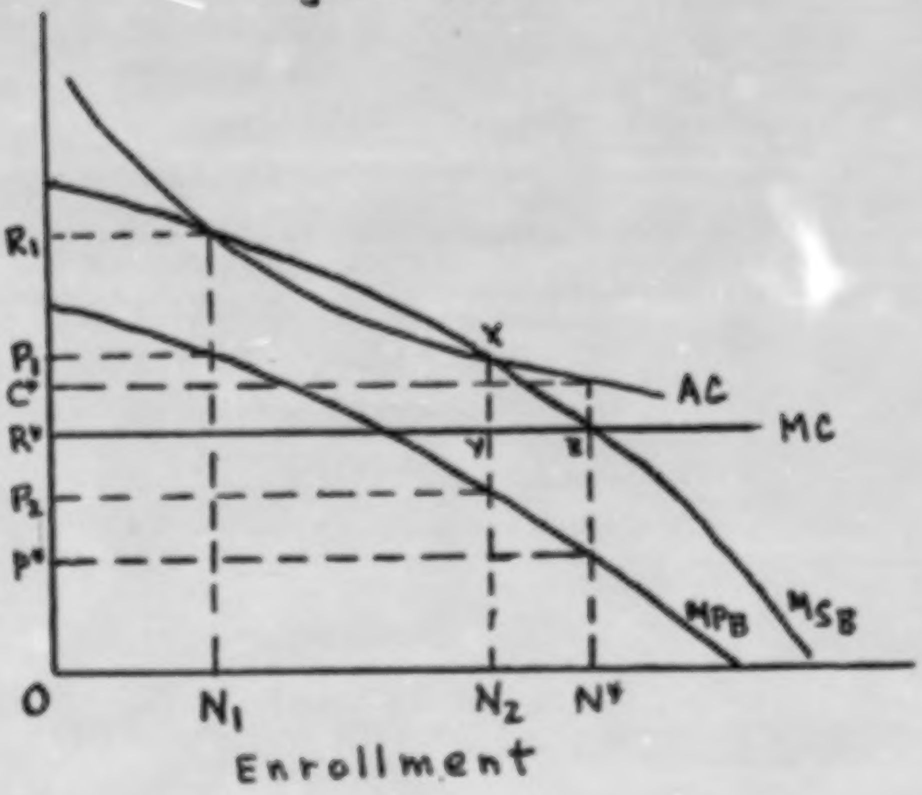
The significance of the distinction between fixed and variable costs becomes clear by considering the related distinction between average cost and marginal cost. Average cost is equal to total cost divided by the quantity of output, while marginal cost equals the increase in total cost associated with producing an extra unit of output. In general, these two costs will not be equal. For some decisions, it is clearly marginal cost that is the appropriate concept to use, but frequently it is average cost which is incorrectly used in practice. For example, in deciding whether to admit an additional student to a course, the appropriate question is whether net social product will be higher as a result. If marginal social benefit exceeds marginal social cost, then the answer is clearly yes. The correct answer would still be yes, even though the marginal social benefit as indicated by the price the student would be willing to pay plus any per student subsidy might be less than the average social cost.

1.4. Financing the OLS

The cost-benefit framework developed above has direct implications for the financing of the OLS. Assume once again that the OLS offers only one course of a given quality, subject, etc. Assume also that both the demand curve and the cost structure are known to the decision maker. The issue then becomes how, in the interests of economic efficiency, the OLS's revenues should be divided among receipts from (a) tuition and fees paid by students, (b) per student subsidies paid by the government and (c) grants paid by the government or private foundations to cover any deficit arising from the choice of optimal values for (a) and (b).

In Figure 1.8 the private and social demand curves faced by the OLS have been drawn together with the average and marginal cost curves. The curve MPB is the private demand curve which reflects the benefits of the OLS course as perceived by its potential students. The MSB curve reflects in addition to the private benefits those external benefits which potential students fail to take into account in deciding whether to enroll. The vertical distance between MPB and MSB is equal to the per student subsidy which the government would pay to the OLS to encourage it to take into account these external benefits in its decision-making. The MC curve shows the cost involved in having an additional student enrolled, while the AC curve indicates the average cost per student enrolled.

Figure 1.8



The optimal enrollment, which occurs where MC = MSB, is N* students. At this level either an increase or a decrease in enrollment would reduce net social product. Efficiency, however, also requires that the particular N* persons who do enroll must be those N* persons who value taking the course most highly. That is, each person enrolled should be prepared to pay at least as much as any person who is not enrolled. One way to ensure the optimal level and composition of enrollment is to charge a price equal to P*. At price P*, N* students will enroll all of whom value taking the course to be at least as great as the course price, while those who choose not to enroll value taking the course to be less than P*. Consequently, by charging a price equal to marginal cost less any per student subsiy, the N* persons who value the course most highly will enroll.

Marginal cost pricing, however, will generate revenues (inclusive of per student subsidies) which will necessarily be less than the total social cost of the course as is made evident by the fact that the AC curve is always higher than the MC curve. For enrollment N*, the total social cost will be equal to the average social cost times the number enrolled or C* x N*, whereas course revenues will be only R* x N*. In order to cover its costs at the optimal enrollemtn, the OLS must receive a grant equal to its total social cost less its revenue from course fees and per student subsidies, or C* x N* - R* x N*. To carry out the optimal pricing and grant policy, the cost structure for the OLS must be identified in some detail. First, it would be necessary to measure accurately the marginal social cost in order to get the optimal course fee. Second, it would be necessary to measure the average (or total) cost for the course at the optimal enrollment in order to determine the required subsidy.

It is interesting to note what options are open to the OLS in the event that no grant is forthcoming. As the benefit and cost curves have been drawn in Figure 1.8 it is possible for the OLS to be self-supporting. At enrollments N_1 and N_2 the OLS would just break even and at intermediate enrollment levels it would actually generate a surplus if it was prepared to charge a fee just low enough to generate such enrollments. For example, if it charged a course fee of P_1 it would generate an enrollment of N_1 and a revenue of $R_1 \times N_1$, i.e., student tuition plus subsidy, which would exactly equal total social cost. Of course, none of these possible revenue and enrollment combinations is optimal. For example, the combination P_2 and N_2, which is the self-supporting combination which is closest to the optimal solution, results in a loss in net social product relative to the maximum equal to the area XYZ. Operating at this level is better than not operating at all and would be the best choice in the absence of any subsidy, but it is clearly inferior from the point of view of society to operating at the combination P* and N* made possible by annual grants to the OLS in the amount of C* x N* - R* x N*.

1.5. Other Decision Variables

Thus far the analysis has been restricted to the case where the OLS offers only one course produced with a given educational technology, a given academic standard, etc. Clearly, the OLS must also decide how many courses to produce and what the characteristics of these courses should be. In making these decisions it is essential to take the effects on both benefits and costs into account. In comparing any two alternatives for any decision variable one would be prefereable to the other if it yielded more extra benefits than it added extra costs. From an economic point of view, the higher technical, aesthetic and academic standards are not always optimal, becuase the greater benefits may fall short of the extra costs.

Consider the case of production quality. As the quality of the presentation of the course increases, the cost of production will increase. Higher quality can also be expected to mean higher benefits; whether because a higher quality production is more effective at teaching the material, or because it is more satisfying, individual students are likely to find the experience more valuable and, consequently, to be willing to pay a higher course fee. The issue, then is simply whether any contemplated increase in production quality yields more extra benefits than extra costs. It clearly is inappropriate to presume either that the highest quality production or that the least cost production is optimal. In some situations either of these extremes might prove to be optimal, but not as a general rule.

The same considerations must be brought to bear on the questions of subject matter and academic standards. While the study of classical languages is intellectually as respectable and may have equally salutary effects on the mind as the study of any other subject, it does not follow that the benefits from offering courses in Greek and Latin outweigh the costs. If they do not, then it will not be in society's interests for the OLS to offer such courses for the resources used up could be put to more beneficial uses. Similarly, while adopting the highest academic standards may bring prestige to a university's faculty, it may not yield the greatest benefits to society. The appropriate difficulty of a course for the brightest ten percent may be inappropriate for the average student. This is true whether one considers the purpose of the course to be the increase in student understanding or the certification of passing students as having an aptitude of some level. What the optimal level of course difficulty is will depend primarily on the characteristics of the population from which students will enroll, since the benefits are likely to vary more sharply with the degree of difficulty than are costs.

1.6. Information Requirements for Rational Decision Making

The essence of the economic approach to rational decision-making is the comparison of the social benefits and social costs for alternative values of the decision variables. The optimal values occur where the difference between total social benefit and total social cost is maximum or, in other words, where the marginal social benefit and marginal social cost are equal. Thus, in order to make optimal decisions, it is necessary to know how benefits and costs vary as the decision variables change.

The difficulty with this approach to decision-making for the UMA-SUN system is that in many cases the required knowledge of how changes in the decision variables affect benefit and cost is simply not available. Consequently, it is difficult to prove whether any particular decision is optimal. What this suggests, of course, is that one of the major objectives which the UMA-SUN OLS should be setting for itself in planning the next five years of its operations is the acquisition of the information required for rational decision-making.

What are the most important information requirements which are currently lacking? In most cases, more is known about how costs respond to changes in decision variables than how benefits respond. For example, reasonable estimates of the cost structure can be made for a given course on a particular subject, at a certain academic level, using alternative technologies. (Such estimates are used in the following sections. While they will need to be revised with experience, enough is known about the technology to make reasonably accurate forecasts of the costs involved.) What no one knows, however, is how sensitive enrollments are to which technology is chosen. Similar examples can be given for other decision variables. While market research is a potential source of information about the effects of decision variables on benefits, UMA-SUN will have to depend on experience to acquire this information. This means that initially UMA-SUN will want to try combinations of values for its decision variables which are highly uncertain as to their eventual impact, but which will yield information which would be useful in future decision-making. For example, it would be appropriate, in order to assess the impact of television, to produce courses which utilize television in different degrees or even produce alternative versions of the same subject and offer them simultaneously to different regions. In summary, one of the great hopes for UMA-SUN is that over the next five years it can acquire an informational base which will enable it and other systems to approach the production and delivery of open learning in an informed and rational way.

1.7. Organization of the UMA-SUN System

The organizational structure of the UMA-SUN system reflects the dichotomy between the production and the delivery of open learning courses. UMA is responsible for decisions relating to the acquisition and development of courses which it can distribute to affiliated delivery systems such as SUN and unaffiliated delivery systems such as Chicago's TV

College. It must decide about the academic content, the pedagogical technique, the technology of each course, etc. SUN, along with other delivery systems in the consortium, is responsible for offering courses, enrolling and examining students, and granting course credit. It must decide which UMA courses to offer, what fees to charge, what academic services to provide enrolled students, etc.

Although decisions about production and delivery will be made by different organizations, the interdependence of the actions taken by the two organizations requires a high degree of coordination. In particular, decisions by UMA about what courses to produce must take into account student demand for prospective courses in the various affiliated delivery systems. But UMA decisions must also reflect the interest on the part of unaffiliated delivery systems in adopting and delivering its courses. One of the key issues concerning the relationship between UMA and both affiliated and unaffiliated delivery systems is what lease fees to charge for the right to use UMA courses. The socially optimal fee over and above the cost of providing a delivery system with a master copy of the course is zero. This fee would be feasible only to the extent that the costs of production of UMA courses were covered by grants to UMA from the government and private foundations. To the extent that grants are insufficient to cover the costs of UMA operations, it will be necessary to adopt the second best strategy of charging positive fees for the use of UMA courses. By charging the affiliated delivery systems a fee independent of the number of courses they adopt, UMA will be able to obtain revenue without discouraging the adoption of its courses.

2. THE COST STRUCTURE OF THE UMA-SUN SYSTEM

2.1. Cost Analysis

As was discussed in Section 1.3. above there are numerous cost concepts which must be intelligently applied in appropriate contexts in order to make rational decisions. For the purposes of this analysis, estimates will be made of the annual costs of the UMA-SUN system under alternative assumptions about the scale and nature of the system's activities. This requires cost functions which indicate the relationship between the total annual cost and the variables for which alternative assumptions will be made. Once these relationships are specified,it is a simple matter to calculate total costs for any set of assumptions about the variables involved. The cost functions also permit the straightforward calculation of average and marginal costs which are essential for undertaking cost comparisons with other academic institutions and for internal decision making.

While the cost estimates that are developed and presented in the following sections are consistent with the actual expenditure projections for UMA-SUN over the next five years, they differ from those projections in several important respects. First, any expenditure for an asset with a useful life exceeding one year will be amortized over the life of the asset and only the annual amortized cost will be included in the cost estimates. Second, certain items will be included in the cost estimates for which no expenditure will ever be made and certain expenditures will not be reflected in the cost estimates. Typically, this will occur in situations where UMA-SUN incur costs which are paid for by someone else or where UMA-SUN must make expenditure for items which do not involve any social cost. Third, the cost analysis will presume that UMA-SUN has reached a steady state equilibrium, while the expenditure projections for 1975-1979 will include certain start-up costs which cannot be expected to prevail in steady state. Finally, the cost analysis abstracts from price level changes over time; all cost calculations are in 1974 prices.

2.2. The UMA Course Production System

The main function of the UMA course production system is to acquire existing and to develop new courses suitable for open learning and to distribute these courses to both affiliated and unaffiliated delivery systems. Two factors make up the main determinants of total cost for the UMA course production system: (1) overhead administration and (2) the number and types of courses produced.

2.2.1. Overhead Administration. This category includes all activities which are necessary to maintain and operate the UMA system independent of the scale of its operations. Whether UMA has ten, forty or a hundred courses available for distribution, the costs of these activities would be the same. Present estimates for the cost of overhead administration by function and by type of expense are as follows.

General Administration

Employees	$163,345	
Operating Expenses	89,693	
Supplies & Material	1,100	
Travel	20,750	
Total		$274,888

Academic Administration

Employees	$82,656	
Operating Expenses	24,934	
Supplies & Materials	400	
Travel	4,920	
Total		$112,910

Public Affairs and Information Services

Employees	14,515	
Operating Expenses	5,337	
Supplies & Materials	600	
Travel	2,528	
Total		22,980

Production Services

Employees	39,670	
Operating Expenses	5,890	
Supplies & Materials	900	
Travel	2,436	
Total		48,896

Research and Evaluation

Employees	52,183	
Operating Expenses	8,049	
Supplies & Materials	1,100	
Travel	2,180	
Total		63,512

Instructional Design

Employees	51,990	
Operating Expenses	5,749	
Supplies & Materials	200	
Travel	1,708	
Total		59,647

Delivery System Coordination		
Employees	$27,891	
Operating Expense	8,362	
Supplies & Materials ...	300	
Travel	4,515	
Total		$41,068
Total Overhead Administration		$623,901

Rounding this estimate to the nearest $5,000, yields a figure of $625,000 for the fixed costs of the UMA course production system.

2.2.2. Courses. For UMA to have an additional course available to distribute to its affiliated delivery systems it is necessary for it to incur the costs of course development, revision, and distribution. Since the typical course will last for more than one year and since some course costs are not distributed evenly over the life of the course, it is necessary, in order to calculate the annual cost of the course, to amortize the development and revision costs over the life of the course. On the assumption that each course lasts ten years and major revision takes place at the end of the fifth year, with lesser revisions after two and seven years, the annual course cost, A, can be calculated from the following equation, where P is the production or acquisition cost, R_i is the revision cost in the ith year, M is the yearly distribution cost, and r is the rate of interest:

$$(2.1) \quad A = M + \left[P + \frac{R_2}{(1+r)^2} + \frac{R_5}{(1+r)^5} + \frac{R_7}{(1+r)^7}\right]\left[\frac{r(1+r)^{10}}{(1+r)^{10}-1}\right]$$

The development of five different course types is envisioned. The estimated development, revision, distribution and annual costs for each type is shown in Table 2.1.

Table 2.1. Production Cost by Course Type

Course type	Development cost	Minor Revision cost	Major Revision cost	Distribution cost	Annual cost
A	$ 680,000	$ 100,000	$ 340,000	$ 10,000	$ 175,000
B	425,000	75,000	212,000	10,000	115,000
C	240,000	50,000	120,000	10,000	70,000
D	50,000	0	0	15,000	25,000
E	280,000	65,000	140,000	10,000	60,000

Type A is heavy TV, Type B is moderate TV, Type C is no TV, Type D is acquired/intact, and Type E is acquired/adapted.

Development and revision costs for all course types except type D include certain expenses for administration amounting to $50,000 for course development and $20,000 for course revision. The estimates for the annual cost assume a 10 percent rate of interest. All estimates have been rounded to the nearest $5,000.

Current plans call for the production over the next five years of 42 courses which would carry degree credit. In addition, 13 non-degree courses will be developed, each of which would be the equivalent of four-ninths of a degree course in terms of both educational output and cost. The projected number of degree and non-degree courses by type are shown in Table 2.2.

Table 2.2. Number of Courses by Type

Course Type	Degree Courses	Non-degree Courses	Degree-Equivalent Courses	Percent of Degree Equivalent Courses
A	5	0	5.0	10.5
B	7	3	8.3	17.4
C	4	1	4.4	9.2
D	7	3	8.3	17.4
E	19	6	21.7	45.4
Total	42	13	47.8	100.0

If courses are developed in these proportions, then the average degree equivalent course will have an annual cost of approximately $75,000.

2.2.3. Cost Functions. The preceding assumptions and estimates imply the following total cost function for the UMA course production system:

(2.2) $TPC = 625{,}000 + 75{,}000\ C$

where TPC is the total annual production cost and C is the number of degree-equivalent courses of the average type.

Given the type and number of courses produced, the average production cost per student degree-equivalent course will depend on the number of delivery systems which adopt the average course and the average enrollment per course per year per delivery system. This relationship is shown in the average cost function as follows:

(2.3) $APC = [75{,}000 + 625{,}000/C]/[S \times D]$

where APC is the average annual production cost per student degree-equivalent course, C is the number of degree equivalent courses, S is the average enrollment per year per course per delivery system and D is the average number of delivery system (both affiliated and unaffiliated) adoptions per course. Table 2.3 shows average cost computations for alternative values for S and D given that 48 degree-equivalent courses of the average type are produced.

Table 2.3. Average Production Cost per Student Degree-Equivalent Course

(48 degree-equivalent courses; 1974 prices)

D = Average Number of Affiliated plus Unaffiliated Delivery System Adoptions per Course

S = Average Enrollment per Course Adopted per Delivery System

D			S		
	100	200	300	500	1000
1	880	440	294	176	88
2	440	220	147	88	44
3	294	147	98	59	29
4	220	110	73	44	22
5	176	88	59	35	18
6	147	73	49	29	15
7	126	63	42	25	13
8	110	55	37	22	11

2.3. The SUN Course Delivery System

While SUN is only one of several course delivery systems to be affiliated with UMA, it can be regarded as a prototype system and can be expected to have a representative cost structure. The total costs of the delivery system will be determined by four factors: (1) overhead administration, (2) learning centers, (3) courses offered and (4) enrollment per course.

2.3.1. Overhead Administration. The delivery system has three functions: general administration, academic services and student services. Estimates of the fixed costs incurred in establishing the minimal capability to carry out these functions are listed below by function and cost category.

General Administration		
Employees	$33,725	
Operating expenses	6,117	
Supplies & Materials	200	
Travel	1,236	
Total		$41,278
Academic Services		
Employees	$27,319	
Operating expenses	3,617	
Supplies & Materials	100	
Travel	1,470	
Total		32,506
Student Services		
Employees	$27,319	
Operating expenses	3,817	
Supplies & Materials	100	
Travel	1,780	
Total		33,016
Total Cost of Overhead Administration		106,800

This fixed cost of approximately $105,000 will be incurred independent of the number of learning centers, the number of courses offered or the number of students enrolled.

2.3.2. Learning Centers. A potentially substantial cost item for SUN is the operation of up to 25 learning centers throughout Nebraska. The fixed costs of operating a learning center, independent of the number of courses offered and the number of students enrolled and using the center, is approximately $32,000. This breaks down into costs by type as follows:

Employees	$26,880	
Operating Expense ...	4,578	
Supplies & Materials ..	100	
Travel	192	
Total Fixed Costs per Learning Center		$31,750

2.3.3. Courses. The mere fact of offering a course will involve certain expenses regardless of the number of students enrolled in the course. For a SUN course, it is assumed that for each credit-equivalent course it will be necessary to have a faculty member for the equivalent of three-sixteenths of a year and a part-time secretary, office space, supplies, etc. His or her primary responsibility would be to supervise both communications with students and learning centers and evaluation of student performance. The estimated annual cost per course independent of the number of students enrolled is approximately $6,500. This breaks down into cost by type as follows:

Employees	$4,818	
Operating Expense	595	
Supplies & Materials..	100	
Travel	1,000	
Total Fixed Costs per Course		$ 6,513

2.3.4. Students. Costs also vary with the number of students enrolled in courses. Each additional student will increase the requirements for academic advising and evaluation, registration and other student services, and course materials supplied to the student. The cost of these requirements is $55. The cost breakdown by category is given below.

Academic Advising		
Graduate assistant	$12.00	
Secretary	2.50	
Telephone	4.75	
Postage and printing	2.00	
Building and equipment	2.15	
Total		$23.40
Student Services		
Employees	3.95	
Data processing	1.00	
Postage and printing	1.00	
Building and equipment	.45	
Total		6.40
Course Materials		25.00
Total Student Cost		$54.80

2.3.5. Cost Functions. The cost estimates presented in the foregoing sections for overhead administration, learning centers, courses offered and students enrolled imply the following total and average cost functions:

$$(2.4) \quad TDC = 105{,}000 + 32{,}000L + (6{,}500 + 55S)Z$$

$$(2.5) \quad ADC = 55 + (105{,}000 + 32{,}000L)/(S \times Z) + 6{,}500/S$$

where TDC is total delivery cost for the SUN delivery system, L is the number of learning centers, Z is the number of courses offered by SUN and S is the number of students enrolled per-course offered. These equations can be restated in terms of the total enrollment in SUN courses as follows:

$$(2.6) \quad TDC = 105{,}000 + 32{,}000L + 6{,}500Z + 55N$$

$$(2.7) \quad ADC = 55 + (105{,}000 + 32{,}000L + 6{,}500Z)/N$$

where $N = S \times Z$.

From equation (2.6) it can be seen that the marginal cost of an extra enrolled student, given the number of courses and learning centers is $55. Also, for an enrollment of 15,000 students, with 48 courses and 25 learning centers, the total delivery cost would be $2,032,000 and the average delivery cost per student would be $135. In Table 2.4 below, the average delivery cost per student enrolled is shown for alternative assumptions for the variables Z, L and S.

Table 2.4. Average Delivery Cost per Student Degree-Equivalent Course

(1974 prices)

Z = Number of Courses Offered by Delivery System (SUN)
L = Number of Learning Centers
S = Average Enrollment per Course Offered

Z	L	S				
		100	200	300	500	1,000
24	25	497	276	202	143	99
24	0	158	109	91	77	66
(N) Total Enrollment:		(2,400)	(4,800)	(7,200)	(12,000)	(24,000)
48	25	308	182	140	106	80
48	0	142	98	84	72	64
(N) Total Enrollment:		(4,800)	(9,600)	(14,400)	(24,000)	(48,000)

2.4. The Complete Open Learning System.

From the cost functions for the UMA course production system and the SUN prototype delivery system it is possible to compute the estimated costs for the complete OLS given assumptions about the values for the key variables which affect costs. In Table 2.5, below, the average cost per student course is shown for alternative sets of assumptions.

Table 2.5. Average Instructional Cost per Student Degree-Equivalent Courses

(48 UMA courses; 1974 prices)

D = Average Number of Affiliated plus Unaffiliated Delivery System Adoptions per UMA Course

Z = Average Number of Courses Offered per Affiliated Delivery System

L = Average Number of Learning Centers per Affiliated Delivery System

S = Average Enrollment per UMA Course Offered per Delivery System (Affiliated and Unaffiliated)

D	Z	L	S				
			100	200	300	500	1,000
1	24	25	1,377	716	496	319	187
2	24	25	937	496	349	231	143
3	24	25	791	423	300	202	128
4	24	25	717	386	275	187	121
1	24	0	1,038	549	385	253	154
2	24	0	598	329	238	165	110
3	24	0	452	256	189	136	95
4	24	0	378	219	164	121	88
2	48	25	748	402	287	194	124
4	48	25	528	292	213	150	102
6	48	25	455	255	189	135	95
8	48	25	418	237	177	128	91

Table 2.5. (continued)

D	Z	L	S				
			100	200	300	500	1,000
2	48	0	582	318	231	160	108
4	48	0	362	208	157	116	86
6	48	0	289	171	133	101	79
8	48	0	252	153	121	94	75

In order to interpret the average cost estimates presented in Figure 2.5, it is necessary to understand the relationship between the number of adoptions of UMA courses (D), the number of course offerings per affiliated delivery system (Z), and the number of affiliated delivery systems. It is important to remember that UMA courses can be adopted by unaffiliated delivery systems and that the affiliated delivery systems need not adopt all the UMA courses. Consequently, it is possible to interpret the first row of Table 2.5 as being consistent with there being two affiliated delivery systems each adopting 24 courses or there being one affiliated delivery system adopting 24 courses and one or more unaffiliated delivery systems adopting a total of 24 courses. The second row is consistent with there being one, two, three or four affiliated delivery systems adopting an average of twenty-four courses each along with an appropriate number of course adoptions by unaffiliated delivery systems ranging from 72 to 0.

In calculating the average cost per student course in the UMA-SUN system, it is necessary to know what portion of the UMA production cost should be attributed to students enrolled in UMA courses offered by unaffiliated delivery system. In Table 2.5, the UMA production cost is divided equally among all students enrolled in UMA courses regardless of delivery system. To perform this calculation it is assumed that enrollment per course offered (S) is the same for both affiliated and unaffiliated delivery systems.

2.5. Cost Comparisons

In order to assess the relative costliness of the UMA-SUN system, the average instructional costs for two alternative systems--the British Open University and the conventional higher education in the United States--are presented below. The issue here is how does the cost of establishing and operating the UMA-SUN system compare with the cost of educating the same students in the alternative systems. For the purpose of this comparison the appropriate basis is average cost for the same number of students. It should be remembered, however, that a cost comparison by itself cannot determine whether UMA-SUN is more or less desirable from society's point of view than the alternatives. Such a judgment must also take into account a comparison of the benefits that each would provide.

2.5.1. The British Open University (BOU).[4] The following cost figures for the BOU are based on estimates of the costs of operations in steady state with 42 courses at an academic level comparable to the proposed UMA courses designed for a total enrollment in the range of 20-35 thousand students. The structure of the BOU is very similar to the UMA-SUN system, and, not surprisingly, it has a similar cost structure, namely, fairly substantial fixed costs and fairly low marginal costs. As a consequence, the BOU, like UMA-SUN, requires a large total enrollment in order to achieve low average costs.

---

[4] This section is based on K. G. Lumsden, "The Economics of the Open University," (TEFERC, Mimeograph).

The fixed costs by type are shown in Table 2.6. Two items require some elaboration. The costs for regional administration cover the operation of 14 regional offices, each of which has a staff including a director, three or four senior counsellors and five to seven staff tutors. These personnel do not deal directly with students but supervise the counsellors and advisers who do. With respect to faculty and academic services and also course production, the bulk of these costs are for the development of new courses to replace courses which are becoming obsolete and the revision of existing courses which are to be retained.

Table 2.6. Fixed Costs for the British Open University

(1974 prices)

Buildings and Equipment	$ 4,077,000
Central Administration	3,733,000
Regional Administration	4,934,000
Faculty and Academic Services	5,035,000
Course Production	5,004,000
Miscellaneous	4,025,000
Total Fixed Costs	$ 26,809,000

The main determinant of variable costs, given the number of courses offered, is the total enrollment in BOU courses. The variable costs per student by category are shown in Table 2.7.

Table 2.7. Variable Costs Per Student

(1974 prices)

Correspondence	$ 96
Tutoring and Counseling	106
Summer School	81
Data Processing	12
Examinations	20
Study Centers	8
Variable Cost per Student	$ 323

One of the difficulties in comparing the BOU with UMA-SUN is that each BOU course is approximately equal to five UMA courses. An Honours BA from the BOU requires eight courses, while a BA from SUN will require 40 UMA courses. One way to adjust for the difference in courses is to divide all costs by a factor of five. It is difficult to judge the bias that this adjustment introduces, but it is most likely to understate the average cost of the BOU, because it would probably be impossible to reduce all costs proportionately in scaling down the "size" of a BOU course. The result of this adjustment is an approximate average cost function for the BOU as given in equation (2.8).

(2.8) $AC = 65 + 5{,}360{,}000/N$

This is not very different, for example, from the cost structure for a UMA-SUN system with the following characteristics: four affiliated delivery systems, ten learning centers per delivery system, 42 UMA courses and 21 adoptions by each delivery system. The average cost function for this UMA-SUN system is shown in equation (2.9).

(2.9) $AC = 55 + 6{,}019{,}000/N$

The implications of equations (2.8) and (2.9) for average cost under alternative assumptions about N are shown in Table 2.8.

Table 2.8. Average Cost per Student Course for BOU and UMA-SUN

(1974 prices)

Enrollment*	BOU	UMA-SUN
50,000	172	175
40,000	199	205
30,000	243	255
20,000	333	355

*Enrollment assumptions are for the entire OLS.

Alternative methods for adjusting for differences between BOU and UMA courses would raise somewhat the average cost estimates for the BOU. It is equally true that alternative organizations of the UMA-SUN system, in terms of numbers of delivery systems and learning centers per delivery system, would yield higher average costs in some cases and lower average costs in others. What equations (2.8) and (2.9) and Table 2.8 make clear, however, is that these two open learning systems have very similar cost structures.

2.5.2. Public Conventional Colleges and Universities.[5] Unfortunately, the data on costs for conventional colleges and universities makes it practically impossible to construct a cost function for conventional institutions of higher learning. Nevertheless, it is possible to obtain estimates of the average instructional cost for the system as a whole as it is currently orgainzed and also for broad categories of institional types. These estimates are shown in Table 2.9.

---

[5] This section is based on J. O'Neill, Resources Use in Higher Education, (Carnegie Commission on Higher Education, 1971).

Table 2.9. Average Instructional Costs by Type of Institution

(1974 prices)

	All Undergraduate Courses	Lower Division Courses
Universities	$ 263	$ 181
4-Year Colleges	224	170
2-Year Colleges	165	165
Liberal Arts Colleges	246	246
All Public Institutions	229	175

In comparing these estimates with the array of average cost computations for the UMA-SUN system shown in Table 2.5, it is clear that for a wide range of plausible assumptions about the key variables influencing cost, the UMA-SUN system is very competitive, even with the least costly segments of conventional higher education.

3. THE BENEFIT STRUCTURE OF THE UMA-SUN SYSTEM

3.1. Demand for Open Learning.

Despite the fact that in the United States the opportunities for conventional higher education are greater per capita than in any other country in the world today, significant numbers of citizens do not take advantage of these opportunities. The principal reasons are that many of these individuals do not have the academic credentials to gain admission or are unwilling to bear the loss of income from full-time employment that would result from pursuing a traditional college education. Continuing education classes, sponsored primarily by existing institutions of higher learning, have been able to satisfy part of the demand of such people, but the evidence suggests that substantial unfilled demands remain. The UMA-SUN system is being designed to help meet such demands.

For such a system to be worth establishing the anticipated social benefits must at least equal the expected social costs. As was seen in Section 2, under a variety of assumptions the fixed costs of any relatively sophisticated open learning system are likely to be substantial. Consequently, economic viability, under plausible assumptions about benefits accruing to individuals enrolling in the system, given existing cost estimates, undoubtedly will necessitate a large enrollment of students.

Adoptions of UMA courses will fall into two categories: adoptions by affiliated delivery systems, i.e., the members of the UMA consortium such as SUN, and adoptions by unaffiliated institutions, e.g., colleges and universities which find UMA courses substitutes for, or complements to, their traditional offerings. As with any new product, the extent of these demands is unknown, but they will ultimately depend on the demand for enrollment in UMA type courses offered by delivery systems. Unfortunately, it is virtually impossible to quantify the demand for enrollment in UMA courses since the necessary data are non-existent. Nevertheless, it is important to consider what factors are likely to affect demand since it is a primary objective of UMA-SUN to identify the effects of these factors on demand through experimentation and evaluation during its first five years of operation.

In specifying a demand function the dependent variable is quantity demanded in some given time period and the independent variables constitute all of the factors which influence the dependent variable. As a practical matter, however, those factors which are likely to be insignificant or incapable of being identified or measured will be ignored. Four questions arise: First, what are the factors which significantly affect the demand for UMA courses? Second, what is the form of the demand function and what are the parameters which indicate how changes in the determining factors effect demand? Third, is the function stable or does it change over time? Finally, which of the significant factors are decision variables of UMA-SUN? It is important to reiterate that while the above questions cannot be answered at this time, the answers will have to be sought as UMA evolves in order to make rational decision-making feasible and, thereby, come as close as possible to establishing an optimal open learning system.

In traditional economic models of demand the factor which receives the greatest attention is the price of the commodity to be sold, in this case tuition for enrollment. In considering the demand for enrollment in UMA courses, price undoubtedly will be important, but other factors cannot be neglected. In considering the demand for open learning enrollment, it is useful to consider the factors in two categories: the characteristics of the student population and the characteristics of the open learning system. In general, the first category will be outside of the control of the decision-maker and the second category will be composed of decision variables. Table 3.1 lists

Table 3.1. Factors Which Determine Demand for Open Learning

Student Population Characteristics	Open Learning System Characteristics
a. Size of population	h. Number of courses offered
b. Age distribution	i. Number of learning centers
c. Income	j. Frequency of course offerings
d. Location	k. Subject matter of courses
e. Amount of "leisure" time	l. Principal media used in courses
f. Alternative educational opportunities	m. Quality of courses
g. Previous education	n. Tuition

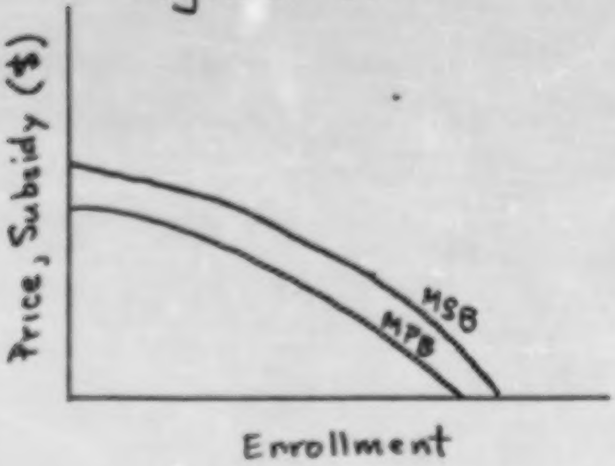
In order to measure the impact of changes in each of these factors on the dependent variable, a demand function with a specific functional form would have to be estimated with actual data. This process would be aided significantly by choosing whenever possible values for decision variables which increase the amount of information about the effects of these variables on demand.

From the demand function it is possible to construct the demand curve which shows diagrammatically the relationship between the price of enrollment and the quantity of enrollment given the values for all other variables which influence the demand for enrollment. Any change in the value of these other variables will cause a shift in the demand curve. Since the demand curve reflects what students are willing to pay to gain enrollment in a UMA course, it indicates the marginal private benefit and can be used to obtain a measure of total private benefit for different levels of enrollment. (See Section 1.2 for a discussion of this point.)

Prior to making its decisions, UMA-SUN will have to assess what benefits if any accrue from enrollment over and above those reflected in the demand curve. This is an even more difficult task than estimating the private benefits. However, to the extent that appropriate government authorities are prepared to provide a per student subsidy, it would be reasonable for the open learning delivery system to treat the amount of the subsidy as a measure of the external benefit per student enrolled. While the political process may produce what appears to many to be arbitrary decisions and in this instance, an arbitrary evaluation of social benefits, the nature of these benefits is such that any ultimate determination as to their value must be political in nature.

Given the demand curve and any per student subsidy, a marginal social benefit curve or social demand curve can be constructed as shown in Figure 3.1. The MPB curve is the private demand curve and MSB is the social demand curve. The MPB curve shows the number of students that would enroll for different tuition rates in a given time period

Figure 3.1



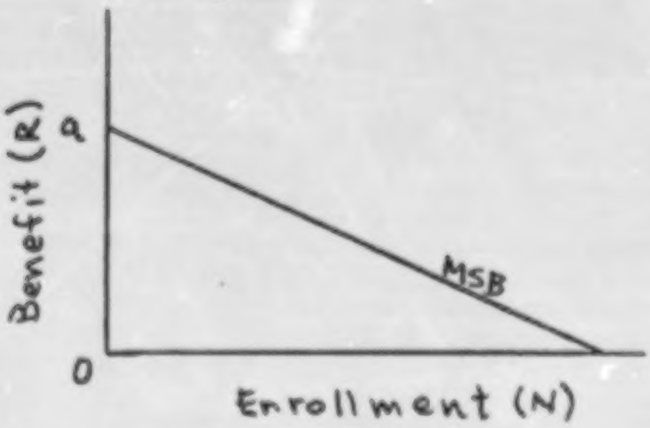
assuming given values for all other factors influencing demand shown in Table 3.1. Another way of stating this relationship is that the MPB shows for any enrollment the price which the last person enrolled would be willing to pay to enroll. The vertical difference between MSB and MPB is the per student subsidy which the government is willing to pay to the OLS for each student enrolled.

3.2. Calculation of Total Benefits

On the assumption that it will ultimately be possible to obtain accurate estimates of the demand function for open learning, it is useful to consider how such information might be used to assess the social value of the UMA-SUN system and to decide on the optimal values for decision variables. To this end, a number of plausible assumptions are made about the demand for enrollment in the SUN delivery system and their implications are worked out for the optimal enrollment in SUN and the total benefit and net social product generated by the UMA-SUN system. Throughout this analysis, SUN should be thought of as part of a consortium of delivery systems, each member of which should be considered to be identical to SUN for this exercise.

For the sake of simplicity, suppose that the social demand curve is linear as shown in Figure 3.2. The negative slope indicates that as enrollment increases, the marginal social benefit--the price the additional student would be willing to pay plus the external benefit resulting from his enrollment--decreases. The social demand curve can be represented algebraically as follows:

Figure 3.2

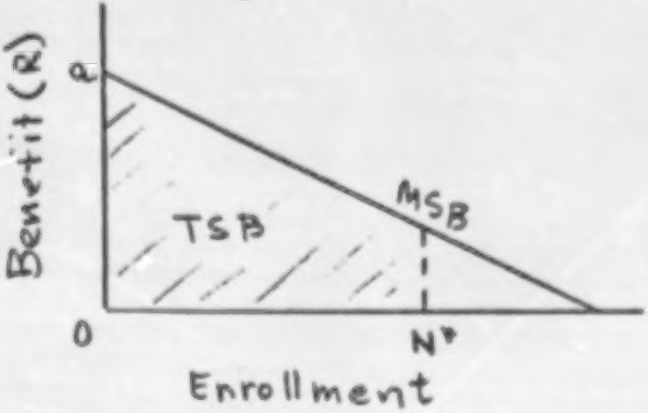


(3.1) $R = a + (b/K)N$

where R is the price for enrollment plus any per student subsidy, N is total enrollment in SUN, K is the maximum enrollment in SUN as determined by demographic factors, and a and b are the at present unknown parameters. The parameter a corresponds to the intercept on the vertical axis and the parameter b divided by K corresponds to the slope of MSB in Figure 3.2. If the intercept on the horizontal axis, i.e., the enrollment when price plus subsidy is zero, equals K, then b = -a.

The social demand curve for open learning is defined to be a reflection of both the private benefits which accrue to the individual students who enroll and the external benefits which accrue to the rest of society. Consequently, it can be used as a basis for measuring the total social benefit generated by the OLS. Since the demand curve in Figure 3.3 shows the marginal social benefit for any given enrollment, for example the optimal enrollment N*, the total social benefit is equal to the area under the curve up to N*

Figure 3.3



Mathematically, the expression for total social benefit is derived in equation (3.2).

$$(3.2) \qquad TSB = \int_0^{N^*} (a + (b/K)\ N)dN = aN^* + (b/2K)N^{*2}$$

The expression for the average social benefit for enrollment N* is simply

$$(3.3) \qquad ASB = a + (b/2K)N^*$$

In order to calculate either the total or the average social benefit for comparison with total or average social cost it is first necessary to choose N*. The optimal enrollment can be found by equating marginal social benefit and cost. The estimate from Section 2 for the marginal social cost is \$55. By setting marginal social benefit to equal \$55 it is possible to find N* as follows:

$$(3.4)\quad \begin{cases} MSB = a + (b/K)N = 55 \\ N^* = (55 - a)(K/b) \end{cases}$$

Given N* and estimates for a, b and K the average social benefit can be calculated and directly compared with the average cost estimates for corresponding enrollments from Section 2.

The logic of this approach can be readily seen by taking a concrete example. Suppos we assume that the value of a is 250, the value of b is -250 and the value of K is 18,500 (or two percent of Nebraska's adult population as suggested by SUN's market survey). This means that the maximum value to anyone's enrolling in a UMA-SUN course is \$250 and that the value of enrolling an additional student when 18,500 students are enrolled is \$0. Given these arbitrary assumptions, the optimal enrollment as calculated from equation (3.4) is approximately 14,400 students. And, from equation (3.3) the average social benefit is \$153. Accepting this estimate as realistic, for the moment, the question then becomes how this compares with the average instructional cost for the UMA system with an enrollment 14,400 in each delivery system. From the cost function (2.7) in Section 2, it is clear that the average cost with a given enrollment depends on how the OLS is organized. Table 3.2 shows the average cost under alternative assumptions about the numbers of course offerings and learning centers per delivery system from equation (2.7).

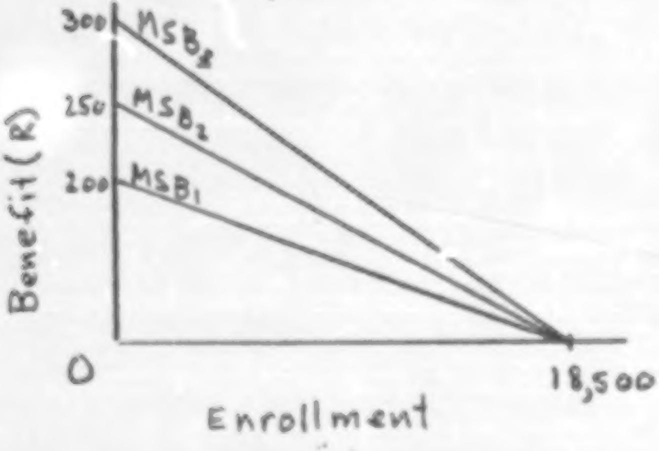
Table 3.2. Average Cost per Student Course
(1974 prices)

Enrollment per delivery system = 14,400

Adoptions per UMA Course	Number of Course Offerings	Number of Learning Centers	Average Cost
8	48	25	177
4	24	25	166
8	48	10	144
4	24	10	132
8	48	0	121
4	24	0	110

If it could be assumed that the demand for enrollment were independent of the OLS's characteristics then maximizing net social product would simply be a matter of minimizing average cost. However, as discussed in Section 2.1, the demand for enrollment is likely to depend on certain decision variables. In terms of the hypothetical linear demand curve specified in equation (3.1) and Figure 3.3, the value of the parameters a and b would depend on characteristics of the OLS such as the number of learning centers in operation and the number of courses offered. For example, three social demand curves are shown

Figure 3.4



in Figure 3.4. Curve MSB_1 is the demand curve if the delivery system offers 48 courses and has 0 learning centers, MSB_2 shows demand curve for 48 courses and 10 learning centers and MSB_3 corresponds to 48 courses and 25 learning centers. To make the example more concrete, assumptions about the parameter values for each case have been made and the implicatons for optimal enrollment and average social benefit are shown together with the corresponding cost estimates and resulting net social product estimates in Table 3.3.

Table 3.3. Hypothetical Benefit and Cost Comparison

	Case 1	Case 2	Case 3
Courses offered	48	48	48
Learning centers	0	10	25
Parameter a	200	250	300
Parameter b	-200	-250	-300
Optimal enrollment	13,400	14,400	15,100
Average Social Benefit	128	153	178
Average Social Cost[1]	126	143	171
Total Social Benefit[2]	1,715,200	2,203,200	2,687,800
Total Social Cost[2]	1,688,400	2,059,200	2,382,100
Net Social Product[2]	26,800	144,000	105,700

---

1. Assuming 8 adoptions per UMA course
2. Per delivery system

In this hypothetical example, both total benefits and total cost increase with the number of learning centers, although not at the same rate. In all three cases, total benefits exceed total cost. In comparing case 2 and case 1, the increase in benefits from increasing the number of learning centers from 0 to 10 exceeds the increase in costs. In comparing case 2 and case 3, the increase in benefits from increasing the number of learning centers from 10 to 25 falls short of the increase in costs. Consequently, of the three alternatives, case 2 has the largest net social product, as can be seen in the last line of Table 3.3.

3.3. The Need for Research and Experimentation

While there exists some evidence which suggests that the demand for high quality open learning may be substantial, the unfortunate fact is that the information required to estimate with any confidence the demand function for enrollment in SUN and other open learning delivery systems is not available. The experience with other non-conventional educational institutions in the United States is so recent and poorly documented that it provides no practical guidance. The data for the British Open University, because of the substantial differences between the higher education industries in the U.S. and U.K., are not applicable to the SUN situation. And, the data from the market research undertaken for SUN leaves too many questions unanswered to provide a sound basis for making demand projections.

One of the exciting aspects of the establishment of an operational open learning system like UMA-SUN is that it provides the opportunity to acquire information about the nature and extent of demand for open learning courses--information which would be of great value not only to UMA-SUN decision makers, but to educational planners throughout the United States. This is one reason why planning for UMA-SUN over the next five years must include consideration of the quantity and types of information which its activities will generate. In short, UMA-SUN must develop, as it appears to have begun doing, a rational experiment design.

Since an experiment is undertaken to generate data on the effects of different factors on certain variables, an optimal design must provide for sufficient variation in each of the factors to be investigated. Furthermore, the variation in the several factors must be such that it will be possible to identify the individual effect of each factor and any joint effects of variables that might occur. For example, suppose it is decided to estimate the effects of TV and production quality on demand for enrollment. Then it would be necessary to offer courses that varied in terms of both TV and quality. Suppose further that the relevant alternatives were high TV and low TV and high quality and low quality. In order to find out what the effects of these variables were, then courses would have to be offered with the following characteristics:

1. High TV and high quality
2. Low TV and high quality
3. High TV and low quality
4. Low TV and low quality

If only types 1 and 3 were offered it would be impossible to identify the different effects on demand of high and low TV. If only types 1 and 2 were offered, it would be impossible to determine whether quality of production made any difference. And, if only types 1 and 4 were offered it would be impossible to distinguish between the effects of differences in TV and differences in quality on demand.

In planning what courses to offer in what circumstances, a decision must be made as to what effects on demand are most important to identify. Obviously the factors which are expected a priori to have a substantial influence on demand must be considered. But, so too must the factors which are expected to effect cost substantially, among the latter group, some of which are also in the former group, are the course production type (A, B or C), the number of learning centers and the number and frequency of course offerings. It is clear from the UMA-SUN preliminary report that considerable variation with respect to these variables has been built into the UMA course production plans and that the opportunity for considerable experimentation by the SUN delivery system with respect ot learning centers and course offerings is present. In order to ensure, however, that meaningful inferences can be drawn from the evidence generated by five years of operation, detailed research and evaluation plans must be constructed along with the development and operations plans.

4. CASH FLOW IMPLICATIONS OF THE UMA-SUN MODEL

In Sections 2 and 3, the costs and benefits of operating the UMA-SUN system were presented and compared for alternative assumptions about key variables and parameters. The purpose was to consider whether the net social product of UMA-SUN would be positive and to determine how net social product would vary as decision variables changed in value. In this section projections of receipts and expenditures are made for a ten year period for a wide range of assumptions. The purpose here is to estimate the amount and timing of cash grants to UMA and to SUN that would be required to make operation for the given assumptions feasible.

The projections are organized into three groups. The first group consists of projections for UMA for different assumptions about the number of affiliated delivery systems, the number of adoptions by unaffiliated systems per course and the lease fee per course. The second and third groups consist of projections for SUN. The two groups differ with respect to the book fee and state subsidy per student and within each group projections differ with respect to the number of learning centers, the number of courses offered and the enrollment per course offered. The first page of each group states the assumptions which underly each projection within the group.

APPENDIX II C

THE CONTEXT OF COST ANALYSIS

A REVIEW OF THE CONTEXT OF COST ANALYSIS

by

Philip Doughty

From: COST ANALYSIS AND TEACHER EDUCATION:
A Comment on Relevant Relationships
A Review of Existing Models

by

Philip Doughty and Albert Beilby
Syracuse University

Sponsored by
The University of the State of New York
The State Education Department
Division of Teacher Education and Certification

(Draft)
January 1, 1974

ABSTRACT: A Review of the Context of Cost Analysis

by

Philip Doughty and Albert Beilby

This paper provides both a conceptual framework and a review of the literature for examining issues related to cost-effectiveness analysis in higher education. The authors draw upon the disciplines of economics, operations research, and instructional development to construct their views. Cost-effectiveness analysis is discussed as a type of systems analysis, to be differentiated from cost-benefit analysis, unit cost analysis, cardinal weighting analysis, ordinal ranking, and best guess decision making. What each of the types of systems analysis have in common is a systematic comparison of alternatives, in quantitative and/or qualitative terms, using logical sequences that can be retraced and verified. What differentiates cost-effectiveness analysis from the other types of systems analysis is the method used in the comparison of alternatives.

Cost-effectiveness studies may be designed to serve top level decision makers, or the several levels of program staff. The level of cost-effectiveness analysis should be geared to the users of the data. Furthermore, users of cost-effectiveness data may be interested in the functions of control, planning, evaluation, and/or development. The level of analysis, as well as the function(s) to be served, should indicate whether the general purpose of the study is description, prediction, or comparison. The authors describe each of the three general purposes of cost-effectiveness studies, as well as the two approaches (fixed effectiveness; fixed cost) to the comparison of alternatives. Preliminary feasibility analysis can lead to a tentative determination of the level, function, purpose, and approach for cost-effectiveness studies. The identification of constraints and capabilities serve as the focus for feasibility analysis, and should be reported in the documentation of cost-effectiveness studies.

The authors describe in detail "models" for assessing cost and effectiveness. Program budgeting is contrasted with traditional budgeting; cost considerations such as inheritance, research and development, and time are discussed; cost categories are defined; and, cost estimating relationships are introduced. Recent studies using cost analysis models in higher education are reviewed under the headings of jurisdictional costs, functional costs, problems with cost, predictive costs, and comprehensive approaches. A resource allocation model as well as Rand Corporation's MODIA (A Method of Designing Instructional Alternatives) are also identified. Effectiveness models are discussed with reference to the problems of evaluative criteria and prediction.

The authors conclude that there is no lack of theoretical models for systems analysis, and that large comprehensive management information systems are in various stages of development and will provide information for high level decision makers. However, the authors advise that management information systems are generally not designed to provide information for use in making instructional design and development decisions, and that cost and effectiveness analysis procedures need to be developed to provide data appropriate for course, unit, and module level decisions. The authors close with the recommendation that better procedures are needed for relating costs, effectiveness, and feasibility considerations for both ongoing and projected instructional alternatives.

A REVIEW OF THE CONTEXT OF COST ANALYSIS

Philip Doughty

Introduction

This section is sequenced such that cost analysis concepts are placed in the context of a more comprehensive systems analysis overview. The format is arranged in the following manner. First, there is a review of the principles of systems analysis modeling and model construction. Second, there is a review and description of a taxonomic classification of the analysis process. The third section contains a discussion of various subsystems which support a total systems analysis. The remainder is a review of some of the more promising applications in education of systems analysis techniques and models. Consideration is also given to applications of the analysis process to instructional development. Ordinarily, the review and description of systems analysis would follow the literature review section since many of the concepts were gleaned from the literature review. In this instance, the purposes, approaches, and descriptions are presented prior to the review to provide an overview of relevant concepts so the reader will have a better framework for interpreting the remaining sections.

Before discussing possible approaches to systems analysis in education, a clarification of existing terminology may be helpful. Literature on systems analysis is quite extensive and redundant. The serious investigator might consult one or more of the following sources as a starting point:

Churchman, Ackoff, & Arnoff - Introduction to Operations Research (1957)
Frank W. Banghart - Educational Systems Analysis (1969)
Karl Seiler, III - Introduction to Systems Cost Effectiveness (1969)

Each of these authors has contributed significantly to the state of the art as it now exists. The definitions and classifications of analysis which follow, however, are not germane to any single author or text, but are a result of a synthesis of many.

The term "systems analysis" is used throughout this review to define a broad range of possible analyses. Other similar terms (operations research, operations analysis, cost-benefit analysis, etc.) used in this section or by referenced authors differ in matters of degree, emphasis, and content. The important characteristic they have in common is the emphasis on making comparisons systematically in quantitative and qualitative terms using logical sequences that can be retraced and verified.

The term "analyst" is used throughout the paper to denote an individual or team of individuals interested in the process of systematically examining objectives, policies, strategies, costs, effectiveness and feasibilities of teacher education. "Analysts" may also be evaluators, designers, developers, or instructors, but application of the process of systems analysis also makes them analysts. (No degree of proficiency is implied!)

Analysis of instructional alternatives is the focus of the power of systems analysis. It is from results of careful systematic analysis that the alternative showing the greatest promise can be indentified. The results of existing approaches in teacher education and the potential of new techniques can be compared, priorities can be set, and decisions can be made on the basis of comparative data from the analyses.

A perusal of the literature on systems analysis shows considerable disagreement among systems theorists on definition of terms. Many writers use the term, evaluation, when they mean analysis. Evaluation for the purpose of this paper, is defined as the judgment of the success or failure of a strategy or program. Analysis is a process of systematically asking questions about the benefits (outcomes-effectiveness) and total dollar cost implications of specified programs and assembling information that will help answer those questions. Some writers use the terms cost effectiveness, cost benefit, and cost analysis interchangeably. An attempt will be made to differentiate between these and each will represent a type of analysis with its own distinct factors and constraints. A good discussion of the semantics problem, if you can modify the context, can be found in Quade's Analysis for Military Decisions (1964, pp. 2-12).

Systems Analysis Modeling

In its broadest sense, the goal of systems analysis is to aid in the formulation, analysis, and choice of future courses of action. Systematic consideration of any problem of choice requires that some model be used. The model may be unstated and undeveloped, but if a decision maker does something other than throw a coin in the air to make a decision, a model of some type is being employed.

Whether or not one model is better than another is determined by its ability to provide a better description, explanation, or prediction. The model providing the best information should then logically lead to better decision making.

It is important to emphasize that an analysis model is not a flowchart or verbal description, but a process. Flowcharts, descriptions, and examples only serve to better communicate the purpose and practice of the process.

Several approaches to systems analysis modeling have been developed and discussed by many authors. Churchman (1957), Quade and Boucher (1968), Seiler (1969), and Fischer (1971) provide thorough model design guidelines although none are specifically intended for educational application.

The systems analysis process involves a series of iterations through several phases. Quade and Boucher (1968) describe the phases as formulation, search, evaluation, interpretation, and verification.

The formulation (conceptual) phase involves the definition of the problem, clarification of objectives, and the establishment of evaluative criteria. The search (research) phase includes the collection of data, the establishment of predictive relationships, and the generation of alternative strategies that might have some chance of solving the problem.

The evaluation (analytic) phase involves the building of various models, the use of those models to predict the consequences of the selection of each alternative, and the comparison of the alternatives in terms of those consequences. The interpretation (judgmental) phase involves the use of the predictions obtained from the models and any other relevant information to compare the alternatives, derive conclusions about them, and suggest a course or courses of action. The verification (validation) phase involves testing the assumptions, conclusions, and recommendations.

Each of the phases is important, but Quade recommends particular emphasis be placed on the formulation phase.

> It is difficult to overemphasize the importance of a careful formulation. It should identify the sub-problems involved, isolate the major factors, develop a vocabulary for dealing with them, stretch out the relationships between the variables as they appear, and even arrive at a tentative set of conclusions. The idea is to make clear the structure of the analysis. But more importantly, it offers a concrete hypothesis for others to probe (Quade, 1964, p.307).

Lovell's (1971) description of the application of the analysis process to elementary and secondary education includes both considerable discussion and extensive graphic representation. Application of a similar process in a teacher education context is not implied but is a definite possibility.

A discussion of the major considerations of systems analysis cannot be complete without giving due consideration to the shortcomings of the process. No analysis can solve all problems or answer all questions. Analysts and decision makers must be aware of the limitations. Quade and Boucher (1968) and Fisher (1971) include the following in their discussions of common pitfalls:

1. Failing to allocate and to spend enough of the total time available for a study deciding what the problem really is.

2. Examining an unduly restricted range of alternatives.

3. Trying to do too big a job.

4. Determining objectives and criteria carelessly.

5. Using improper costing concepts.

6. Becoming more interested in the details of the model than in the real world.

7. Forcing a complex problem into an analytically tractable framework by overemphasizing ease of computation.

8. Failing to take proper account of uncertainty.

Model Building

Fisher (1964) comments that a model, depending on the nature of the problem, can be formal or informal, highly mathematical or not at all mathematical, computerized or manual. He emphasizes that a model need not be highly sophisticated or formal to be useful. He lists several points that a model builder should keep in mind:

> (1) Model building is an art, not a science. It is often an experimental process. (2) The main thing is to try to include and highlight those factors which are relevant to the problem at hand, and to suppress (judiciously!) those which are relatively unimportant. Unless the latter is done, the model is likely to be unmanageable. (3) The main purpose in designing the model is to develop a meaningful set of relationships among objectives, the relevant alternatives available for attaining the objectives, the estimated cost of the alternatives, and the estimated utility for each of the alternatives. (4) Provision must be made for explicit treatment of uncertainty. (5) Since by definition a model is an abstraction from reality, the model must be built on a set of assumptions. These assumptions must be made explicit. If they are not, this is to be regarded as a defect of the model design (Fisher, 1964, p. 10).

The model selected by an analyst following such guidelines depends on the purpose of the analysis as well as the types of criteria established and types of data obtainable. Two which are appropriate for educational purposes are classified as mathematical models and tabular display (matrix) models. Mathematical models are suitable when all the evaluative criteria can be quantified and are comparable. For most educational purposes, this is not possible. A tabular display model allows more flexibility so alternatives can be compared using various quantifiable but uncomparable measures in addition to qualitative statements of relative effectiveness, efficiency, etc. Unquantifiable measures are often highly valued and demand consideration so it is usually necessary for a tabular display model to be used in most educational systems analysis comparisons. Some qualitative analyses can be included in a formal model and additional discussion on nonquantitative considerations can be included in both the analytical and evaluation phases.

Uncertainty

Predictive analyses of instructional alternatives include many elements of uncertainty. These include uncertainty about the state of the world, higher education, or teacher education, as well as uncertainty about change elements that might exist even if environmental uncertainties do not exist. Quade (1963), Fisher (1964) and Hitch (1955) have written extensively on the topic as it relates to military analysis and much of this can be applied to education analysis.

A technique for treating uncertainty that appears to have general promise for education is sensitivity analysis. For variables about which the analyst is very uncertain, application of this technique will at least provide several estimated values rather than one expected value. A range of values for a variable may be plugged into a model to see what effect each will have on the outcome. If there are many of these variables, considerable calculation is required and the question then arises as to the value of the exercise in relation to the usefulness of the information generated.

Validation

Accuracy of prediction is an indicator of the validity of a prediction model. It is difficult to validate a model without actually developing and testing generated alternatives. Cost and time constraints usually prohibit this type of testing. This is not an uncommon circumstance. Quade (1963) suggests several criteria that can be used to check the validity of many types of models. He asks,

> (1) Can the model describe known facts and situations reasonably well? (2) When the principle parameters involved are varied, do the results remain consistent and plausible? (3) Can it handle special cases that we already have some indication as to what the outcome should be? (4) Can it assign causes to known effects? (Quade, 1963, p. 20).

Analysis Of Systems Analysis

Classification of the concepts, purposes, and approaches to systems analysis leads to a multiple category taxonomy of terms. This section contains a brief description of five interrelated, non-sequential, relatively exclusive categories. Each is defined and broken into subcategories. The five categories are: (1) level, (2) function, (3) purpose, (4) approach, and (5) type. Before an educational planner or designer can begin to even conceptualize a model or an analysis, a "thorough understanding" (apologies to Robert Mager) of these categories is essential.

Level

When developing a model, one of the first determinations an analyst must make is the level of information the model must provide for intended decision makers. If the model is to be used only by top level administrative decision makers (legislature, Board of Regents, school board, university president) the depth or detail of concern need not be extensive. If the data will be used by department chairmen, instructors, and instructional designers, the level will need to reach substantially below the program level, perhaps to the level of a unit of instruction or even the performance objective level.

It will require considerably more time and resources to collect and analyze data at the lower levels, so if there is no need for detailed cost, effectiveness, and feasibility data, the analyst needs only to assemble information at the appropriate higher level of interest. The key to determining the appropriate level then is ascertaining the level of specificity of information that the model must provide.

Consideration of the following questions will assist in that determination.

1. Who will be using the information furnished by the model? The analyst must identify the decision makers who have the authority to initiate, terminate, and alter policies governing the alternatives being analyzed. In teacher education this authority will undoubtedly rest with more than one person (professor, department chairman, superintendent, dean, vice-president). It is important to know how these people make decisions so that the results of the analysis can be properly structured and presented.
2. Who is to be implementing the model?
3. How is it to be implemented (hand calculations or sophisticated electronic hardware)?
4. What is the complexity of that being represented by the model?
5. How often is the model to be used?
6. What degree of precision does the model need to have in relationship to the real world?
7. How accurate is the data that will be used in the model?
8. How accurate does the data need to be?

Function

There are several activities to which systems analysis contributes. Each has a specific purpose and an identifiable outcome, but they may also be closely dependent upon one another. The four identified are control, planning, evaluation and development.

Control. The educational manager, be he (or she) president, dean, or instructor, must be able to effectively manage the resources for which he is responsible. This management cannot be done after the vouchers or purchase orders have been signed but must begin in advance of all signing of contracts. Cost control practices in particular can only be implemented before the fact. However, after-the-fact cost and effectiveness assessment information will help decision makers control ongoing and future programs.

Planning. Cost analysis information allows planning for future changes in allocation of resources for a course or a program. This information can allow for planning of potential expanded uses of a teacher center or for expansion of a course or unit of instruction. It can also provide more general information for use in planning adaptations of a technique such as an individualized approach to other suitable learning situations within a university. General analyses can also produce a range of potential courses of action by means of a systematic study of all alternatives.

Evaluation. After-the-fact cost analysis data are valuable for use in comparison with planned costs so that better subsequent planning data can be used for decisions about the value or utility of future revisions and new projects. Greater instructional effectiveness as well as more efficient research and development efforts can also be attained through the use of after-the-fact analysis information as one basis for decision makers judgments of a program's success or failure.

Development. Costs and effectiveness analysis information can assist in more efficient and effective development of materials and procedures for instruction. Information can also assist in the design of better plans, better management techniques, and the development of better systems and techniques for producing and reproducing instructional materials.

Purpose

In addition to levels and functions, three general purposes of systems analysis must be considered because of the valuable guidelines they provide. The three are related temporally and may be highly interdependent.

Descriptive analysis. Descriptive analysis is employed to describe ongoing programs. Accounting and assessment data acquired in the application of this type of analysis provide the bases for all other analyses. Cost analysis (accounting) is used to measure dollar costs and relate costs to output. Effectiveness (benefit) analysis is conducted by measuring cognitive and non-cognitive changes in learners (output) in relation to stated objectives.

Predictive analysis. Predictive analysis is used by those who need to ascertain costs and benefits of proposed alternatives. This requires consideration of prior costs as a basis for a predictive cost analysis. It also necessitates determination of objectives, strategies, required resources, cost estimating relationships, and the costing of resources. Effectiveness analysis is used to predict the level(s) of output of effectiveness of each alternative. Predicting various levels of effectiveness based on previous studies is one of the most difficult and least precise activities a systems analyst must perform.

The inexact nature of such activities oftentimes leads to condemnation of the entire process; but systems analysis is only intended to reduce, not eliminate the margin of error in the decision-making process.

Comparative analysis. As stated earlier, the ultimate goal of systems analysts is to make comparisions. Comparative analyses are based on both descriptive and predictive analysis. Ex post facto comparisons can be made by using data from properly designed descriptive analyses. A priori comparisons make use of predictive analyses which in turn are built upon descriptive studies. It is for this purpose that a distinction needs to be made between the various types and between approaches.

There are several more specific purposes for which systems analysis can be used. One is the allocation of resources among identified objectives. Another is the choice of alternative means to meet the given objectives. A third is the assessment of the worth of different objectives. A fourth purpose is to provide for the systematic generation of alternatives which were not originally identified.

Each of these will be discussed more fully in later sections.

Approach

In comparing alternatives in terms of the data generated by the analysis model, several different conceptual approaches may be used.

Fixed effectiveness approach. One approach is to specify a desired level of effectiveness or output and then examine the cost of alternative means of achieving that specified level. The purpose is to identify the alternative or combination of alternatives which will reach that level with the lowest expenditure of resources. This is appropriate if defensible, comprehensive indicators of effectiveness can be identified. Most educational alternatives bring about learner change of several kinds so identification of such a measure is speculative at best.

Fixed cost approach. Another approach is to fix a single budget level (cost) and then examine the level(s) of effectiveness that might be achieved through different alternatives. The intent is to identify the alternative or combination of alternatives which will produce the highest effectiveness.

A third hypothetical alternative allows both the cost and effectiveness to vary. This permits the naive idealist to request, "I would like to get the maximum possible effectiveness for the least possible cost." Carried to its logical conclusion, the approach would result in infinite effectiveness for zero cost. In reality it reverts back to the fixed cost approach, where, at some stage, limits are placed on the amount of resources available.

Carpenter and Haggart (1970) recommend the fixed cost approach because it focuses the attention of decision maker and analyst on the effectiveness of alternatives which is by far the most difficult phase of the analysis process. The problems associated with comparing effectiveness of instructional alternatives would indicate that the fixed cost approach is more suitable for educational purposes. Costs are usually fixed by adjusting the dimensions of each alternative (such as the number of students enrolled) so that each alternative incurs approximately the same total cost over a common time period.

Type

Six types of analysis of educational programs in descending order of sophistication will be described. Some mention of analytical approach will be included where appropriate. The types of analysis are: (1) Cost benefit analysis, (2) Cost effectiveness analysis, (3) Unit cost analysis, (4) Cardinal weighting analysis, (5) Ordinal ranking, and (6) Best guess decision making.

Cost benefit analysis. Cost benefit analysis is an analytical approach to the selection of alternatives on the basis of comparisons of benefits and costs. The approach is appropriate only when alternative outputs can be quantified in dollar terms. This is the only type that incorporates value judgments into the analysis. Estimates of social value of the output(s) of each alternative are given dollar values so that the benefits of each alternative can be expressed as a single measure -- dollars. This is also the only approach which will permit direct comparisons of alternatives with different objectives. By translating the outputs of each alternative to dollar terms, common comparisons are possible.

A cost-benefit ratio for each alternative can be derived by dividing the value of the benefits by the value of the costs. However the costs and benefits are determined and computed, most authors indicate that total benefits should be greater than the total costs (B-C ratio greater than 1.0) if a program or alternative is to be considered. Computations must be made and a benefit-cost ratio derived for each alternative before comparisons can be made. Results or changes that are not related to specified objectives are not considered benefits. Many of these by-products or spillovers can be identified and analyzed but only as supplementary gains, not as benefits.

McKean (1958, pp. 34-37, 107-113) and Hitch and McKean (1960, pp. 166-167) have written lucid and enlightening discussions of the possible treacherous nature of ratios. Eckstein (1958) on the other hand, bases many of his analyses on the development and use of ratios.

Dorfman's analysis is perhaps most insightful. "The heart of the matter lies in deciding what benefits should be included and how they should be valued. The debate about benefit-cost analysis centers on the question of whether the social value of benefits can be estimated reliably enough to justify the trouble and effort involved in a benefit-cost computation (Dorfman, 1963, p. 8)."

New statistical models and techniques hold great promise as solutions to some of the problems involved in calculating educational benefits in dollar terms. Additional research and development will help as the art becomes more scientific and better data are obtained.

Cost effectiveness analysis. Cost effectiveness analysis is appropriate when a market evaluation or value can not or should not be placed on the outputs of the alternatives, but the resources (inputs) of the alternatives can be evaluated or measured in market prices (dollars). The approach is derived from non-educational settings where the problem is to select a strategy or product from a set of alternatives designed to achieve specified objectives.

The recommended approach for education is to construct fixed or equal-cost alternatives so that each will require approximately the same total cost for a fixed time. The projection of estimated costs of each alternative can be done with more confidence than projection of effectiveness, particularly since no single measure of effectiveness will reflect the total output of any instructional alternative.

Cost-effectiveness analysis is most useful for resolving problems that hinge on allocation of resources because the techniques and systems needed for the analysis of costs are somewhat more sophisticated and better developed than are those for the analysis of effectiveness. Stated differently, it is usually easier to specify the cost variables in an educational system than it is to determine the larger set of variables needed to account for effectiveness. It should be emphasized that the cost-effectiveness approach will provide little help in determining whether an alternative or an objective is worthwhile. Value judgments of this sort are left to decision makers and are not generally identified and quantified as in the cost benefit approach. However, many of the evolving needs assessment and futures generating (Delphi, etc.) processes have potential for assisting in this "data gathering for value decisions" area.

Unit cost analysis. Unit cost analysis helps a decision maker see what components comprise the cost for a course, alternative, or a competency and how changes in these components will affect cost levels. Unit costs allow a decision maker to predict future costs when changes are introduced in faculty salary, faculty work load, enrollment, student credit hour allotment, or other variables.

Quantitative and qualitative effects of changes in alternatives are not usually measured or reflected in unit costs. Most unit cost analyses are based on jurisdictional costs (usually derived from line-item budgets) which do not reflect the total costs required to realize some specified outcome. They are far too general to be used as a basis for cost benefit or cost effectiveness analysis. Those which do reportedly use functional costs (related to output) are able to provide the kinds of information that can greatly aid the decision making process.

Care must be taken to avoid misconceptions that often result from the use of unit cost analysis data. Use of unit cost alone emphasizes the fiscal aspect to the exclusion of the effectiveness of an alternative. There is a great temptation on the part of decision makers to create more "efficiency" through cost reductions than to improve the effectiveness. It is also easy to make improper comparisons between courses, curricula, or departments which are not comparable in nature.

Although unit cost information has been misused and abused historically, this need not keep unit cost analysis data from providing valuable information. Proper design and implementation of unit cost analyses and a thorough understanding of the nature of unit costs by decision makers can result in better decisions.

Cardinal weighting analysis. Cardinal weighting analysis departs from the quantitative approach except for the calculation of direct costs for each alternative. It relies on identification and specification of the advantages and disadvantages of each alternative. The more sophisticated analyst may consider cardinal weighting as amateurish. But the listing and weighting of advantages and disadvantages of alternatives, even if done on a value judgment basis alone, will most probably result in more clarity and honesty in alternative selection.

The method is quite simple but can be very effective if properly applied. The analyst begins by listing the advantages of an alternative. Every advantage for an alternative is weighted by awarding each a number from 1 (lowest) to 10 (highest) in value. This process is followed for each advantage and the points are then added. The procedure is repeated by listing disadvantages of the alternative but with the values of the weighting scale running from 1 (least disadvantageous) to 10 (most disadvantageous). A cardinal weighting index for the alternative can now be obtained by subtracting the total disadvantage points from advantage points. The procedure is repeated for each identified alternative and a comparison can then be made between the cardinal weighted indices. The alternative with the greatest number of points should be the most valuable one. If the cost of that alternative is the same or less than lower weighted alternatives, the recommended decision becomes obvious.

This procedure, is useful only if: (1) the analyst lists as many as possible of the advantages and disadvantages of each alternative, (2) the weights are objectively assigned to each advantage and disadvantage, and (3) the decision maker realizes that the results of the analysis are only as useful and valid as the lists are comprehensive and the weightings objective.

This procedure will at least clarify the issues involved when considering alternative approaches or programs and will lend assistance when the data and personnel are not adequate for more sophisticated analyses.

Ordinal ranking. Ordinal ranking of alternatives is an analytical procedure in which alternative programs are ranked in order on the basis of predetermined criteria. Criterion can be determined in many ways by many and diverse interests. How the criterion is determined is as important as the ranking process. The criterion might be developed on the basis of total or direct costs, time, number of key personnel or learner satisfaction. Agreement on each criterion measure or basis of the ordinal ranking should precede the application of the analysis. Establishing criteria after the initial stages of the analysis have been completed is a less than objective approach. However, if new and valid criteria are discovered while doing an analysis there is nothing to prevent additional analyses being made using the new criteria.

Best guess decision making. Best guess decision making need not be a totally unobjective process. A statement of the reason or reasons for recommending a given alternative can be based on considerable research and evidence. The reason may be logical, psychological, political, or otherwise. Much more sophisticated analysis may have preceded the solution, but if time and other factors prevent a more detailed documentation, a simple statement of why a particular recommendation was made will be of some help.

The purpose of this section on analysis of analysis was to do just that -- to break up the process in order to view the nature and relationships of its components. To complete the picture, a look at the way these components are combined to form subsystems is necessary. A complex problem may require that many specific analytical models be developed. Other problems may only require one comprehensive model. Three primary analysis subsystems are discussed in the following section. Each is an example of an important class of subsystems.

Analysis Subsystems

Cost Model

Traditional and programmed budgeting. There are many limitations in using a traditional educational budget as a base for a cost model. Briefly, the primary problems involved in using a traditional budget are: (1) the difficulty of relating the budget to goals or objectives; (2) the difficulty of allocating resources; (3) the difficulty of projecting budgets and costs beyond the current budgeted year; (4) the impossibility of relating costs to outcomes; and (5) the lack of integration between planning and control (including budgeting) and the instructional or program element of an institution.

Most educational accounting systems are designed to insure budgetary compliance rather than for determining program costs or measuring instructional effectiveness. Budgets are purposely designed to identify appropriate sources of funds and accounting for the source of budgetary expenditures rather than assisting in the allocation of resources. In order to generate alternative means or ways to accomplish some given outcome, a decision-maker must be able to relate costs or expenditures to outcomes. When this can not be accomplished, the generation of feasible alternatives to the achievement of objectives is not possible.

Construction and use of the traditional budget has historically been the domain of budget officers or finance experts and communication between them and those responsible for instruction has been minimal. Finance experts have not been expected to be responsible for instructional decisions and those with instructional responsibilities have avoided planning, allocating, or relating costs to outcomes.

The purpose of the relatively new (to education) program planning and budgeting system (PPB) approach is to provide the basic and essential information needed by all decision-makers so that they can analyze feasible alternatives and make decisions based on more appropriate data. It should be noted that most attempts to implement such a system in education have not centered around the information needs of teachers or program designers.

The absence of a PPB system does not eliminate the possibility of an analysis study being conducted. The task of defining, costing, and analyzing the output of ongoing alternatives which have not been defined in a program format is difficult however. A well designed cost analysis model will assist in accounting for costs of ongoing programs as well as in predicting costs of potential programs.

There are ample discussions in the literature of the history, theory, applications and shortcomings of program budgeting. Several of the more concise descriptions have been written by Banghart (1969), Haggart et al. (1969), Levine (1969) and Pfeiffer (1968).

Cost considerations. As with the general systems analysis model, design of the cost model requires that analysts carefully consider many factors. Several of these, i.e., inheritance, research and development, and time, merit brief discussion.

Inheritance. Inheritance consists of previously procured tangible assets such as facilities, equipment (hardware) and software. The cost over and above the resources that can be inherited is the additional or incremental cost that will be charged to a new system or program. The goal of the analyst is to minimize this incremental cost by building on existing programs where possible and sharing the inheritance of other programs.

Research and Development. Care must be taken to distinguish between research and development, research in development, and research on development. Generally speaking, only those research and development costs that contribute directly to program goals should be included in the cost model. If resources are required for more basic research on development, those costs should be singled out from normal research and development costs and reported separately.

Time. There are several time functions that must be considered in educational cost analysis. Four of these are uncertainty, discounting, depreciation, and obsolescence. Each has an impact on total cost but determining the degree of impact is quite difficult. Few examples of applications of these cost functions exist in education literature, but military and industrial applications do provide guidelines. Uncertainty was mentioned earlier under sensitivity analysis and will not be discussed here but the importance of its consideration cannot be overemphasized.

McKean (1958, pp. 76-92) has written one of the better discussions on the various approaches and rationale to discounting. Hitch and McKean (1960, pp. 205-218) present several arguments in support of the process of discounting future cost. They comment that acquisition and use of a monetary unit in the present will cost less than acquiring and using it in the future.

In addition to the question of whether to discount or not is the controversy over the appropriate rate to use. Various federal agencies use discounting techniques in their program plans, but the rates they use to discount vary widely. The rationale used for establishing a given rate is usually quite subjective and the use of the process in any but the largest programs does not appear to be worth the time and effort.

Depreciation and obsolescence in an educational setting are valid time-based cost functions. Determination of depreciation schedules based on use, output, and obsolescence approaches true depreciation costs more closely than the present straight-line depreciation schedules now being used by most educational cost analysts. When technological innovation is accelerated or remains at a high rate of acceleration, the expected life span of some equipment is shortened by the increased rate of obsolescence. Depreciation is usually considered a fixed cost. But consideration must be given to the fact that increased use affects the value of equipment by changing the expected life span. Straight-line computations of depreciation (for hardware and software) are precise but they are often misleading when used as the only basis for depreciation schedules.

Many analysts use amortization accounting instead of depreciation. This requires making annual payments into a sinking-fund to replace original equipment at the end of its economic life. Interest earned on money in the sinking-fund aids in accumulation of replacement money. However, this process is not usually feasible in public education institutions.

Cost categorization. One of the first tasks to be performed in conducting a cost analysis or in designing a cost model is that of defining and listing all the major cost categories of resources required by an instructional alternative. These categories serve to specify the segments that need analysis. Identification and tabulation of such interrelated and non-exclusive cost categories as joint costs, fixed and variable costs, and recurring and non-recurring costs will help distinguish between instructional alternatives on a functional cost basis. In this way, predictive costs can be estimated more accurately and differential cost effects, both in magnitude and kind, can be identified as program elements are varied within and between alternatives.

Results of any cost analysis can be easily biased by the exclusion of categories or the inclusion of inappropriate cost categories. Certain types of costs (sunk costs, discounted costs, and incremental costs) can easily invalidate an otherwise good cost model if handled incorrectly.

In order to accurately predict total system costs, expenditures need to be categorized in two classes -- non-recurring and recurring -- so that long and short-range cost predictions can be made. Non-recurring costs include such areas as research and development activities and the initial investment to implement the results of those activities. Among the list of research and development costs are preliminary research and design studies, design and development of subsystems, and system evaluation costs. Initial investment includes costs for training, equipment, facilities, and installation expenditures. Recurring costs are composed of annual operation costs needed to maintain and evaluate a program. This includes items such as salaries, replacement and maintenance of equipment, and expendable supplies.

Analysts also need to know which costs included in an alternative are fixed (i.e., would not change because of changes in level of activity) and which costs are variable (i.e., costs that respond to alterations in quantity or quality of operation). Such a separation provides the base for estimations of how costs would be modified or what the marginal cost effect would be as a result of changes in enrollment, instructional strategy, criterion levels, etc.

The Rand Corporation employs a method of cost accounting which separates total system costs into three classes. The three classes can represent overlapping time-phased resource requirements of an instructional design project. The classes categorize costs by: (1) Research and Development - which includes all costs necessary to bring the system into readiness for operation (non-recurring); (2) Investment - which includes all non-recurring costs required in the process of phasing a system into operation, e.g., facility, equipment, and training costs and, (3) Annual Operating - which includes all costs necessary for the operation of the system, e.g., salary and allowances, training, and maintenance costs (recurring) (Petruschell & Chester, 1963).

The general scope of a cost model can be displayed in a systematic manner by using a cost table or matrix. The matrix approach classifies all general cost elements horizontally and system or phase elements vertically. For design and development purposes, the matrix could include the terminology of specific hardware and software components as well as consideration of various time or function phases. Examples of this matrix format will be provided in a subsequent section devoted to a generic cost model for teacher education.

Cost estimating relationships. The theory of cost modeling rests basically on two components or relationships. One concerns the matter of deciding what is to be costed and charged to an alternative. This task consists of listing and defining the appropriate categories of total dollar cost. The other concerns the technique of cost prediction. These relationships are generally termed cost estimating relationships. One relationship is the estimate of the cost per unit of each resource. The second type is the estimate of the number of units required to meet the necessary prerequisites for each alternative. These relationships are used to relate required resources to their costs. In developing a predictive cost model, data from past experience or ex post facto cost analysis information can be used to derive many of these estimating relationships.

Ex post facto cost analysis or cost accounting does not require cost estimating relationships because actual costs are used rather than predicted costs. Data from cost accounting or after-the-fact cost analyses do provide valuable insight and guidelines for establishing estimating relationships for predictive cost models. These data are of little use, however, when a newly designed alternative includes few of the components of the operational program. Once a relationship for estimating the unit cost of a resource has been established, either from prior cost information or from estimates, the next step is to attempt to determine how many units of this resource will be needed to meet the requirements of the alternative.

A predictive cost model must serve as a device for estimating the costs of future alternatives by translating the descriptions of these alternatives into requirements for resources and then transforming those requirements for resources into costs. In order for the predictive cost model to be useful, this translation of alternatives to resources to costs must be relatively simple and explicit or so mechanized and flexible that users will not view the model as being too restrictive or difficult.

Resource analysis. Several process models designed to assist in the allocation of resources to specified instructional strategies are in formative stages of development. A model for analyzing resource utilization of on-going instructional programs has been developed by the Evaluation Training Center of the College of Education at Florida State University. Precise specification of instructional resources being used allows model users to apply much simpler costing procedures to ascertain program costs.

Developed under the sponsorship of the Research and Development Program of the Florida Department of Education, the model also assists teachers, instructional designers, and analysts to predict costs of proposed instructional alternatives. Through a series of relatively well defined, interrelated procedures, the model user is able to allocate resources by analyzing the type and domain of specified instructional objectives, the instructional activity selected as appropriate for the objective(s), and the resource requirements specified by the activity. Unfortunately, the cost analysis procedures for the model have not been well enough developed to be of immediate use (Beard et al., 1971).

MODIA. The Rand Corporation's MODIA (A Method of Designing Instructional Alternatives) model is another process approach to designing instructional programs. It consists of a series of procedures and tools that allow an instructional designer to examine alternative strategies during a planning stage and be able to predict the impact of resource allocations on program outcomes (Carpenter, 1972). Current emphasis of the model has been on the use of technology in designing instruction for formal technical training in advanced military training settings. A more detailed analysis of this model is contained in the following section of this report.

Procedures like these will make instructional design and instructional resource allocation procedures much less subjective and, at least theoretically, lead to greater instructional effectiveness and efficiency.

Cost analysis texts. A prospective cost analyst seeking assistance from the literature can easily become overwhelmed by the volumes devoted to costing, cost accounting, budgeting, etc. Although not specifically written for education, two of the more readable and useful sources are books by Fisher and Seiler. Application and adaptation of their guidelines and procedures should assist greatly in designing a viable cost analysis process model.

Gene Fisher (1971) relies on the military for examples and applications for his book *Cost Consideration in Systems Analysis*. The major emphasis is on assessing the cost implications of alternative future military capabilities. He does not discuss cost accounting, cost estimating for future operations, or cost analysis of detailed design activites, but much of what is included is applicable to these areas. Translating his military verbage into educational jargon is fortunately more of a challenge than an onerous task. Karl Seiler's (1969) relatively brief (108 pages) text, *Introduction to Systems Cost-Effectiveness*, assumes a basic understanding of calculus and probability theory, but mathematical applications are minimal and literary explanations are well done and ample. From the viewpoint of a cost model builder, the most important guideline to be gleaned from these texts is that the cost-related information for each alternative must be transmitted to decision makers in a format that will accurately represent the alternative and permit meaningful comparisons.

Effectiveness Model

The analysis of effectiveness of educational programs or alternatives should be as vigorously developed as the analysis of the resources used to implement a program. The uses of systematic techniques for planning an instructional alternative should lead to the expansion and improvement of ways to relate the quantity and quality of the output of the alternative to the resources used to create that output. Decision makers also need criteria other than cost for measuring productivity or usefulness. The criteria for these outputs (other than cost) can be grouped under the general term effectiveness. Just as cost is a measure of the resources that comprise an alternative, effectiveness is a measure of the output of that alternative. If possible, effectiveness is measured in terms of performance or change, but it can also be measured in general terms with qualitative interpretations.

Like the cost model, the effectiveness model can be described in terms of its elements and methods for identifying and predicting the measures of those elements. The kinds of components that can be used are as numerous as there are kinds of systems and kinds of measures. The basic elements, by necessity, must oversimplify a very complex real world. What is required of these components is that they usefully express the relation between measures and performance, or more specifically the capability of the alternative to achieve the specified objectives.

Each instructional alternative should be comprised of multiple objectives aimed at achieving specified goals. It is important to determine whether those objectives are unique or if they actually form a hierarchy with a single, assessable objective at the top. If a single measure of effectiveness can be determined from a set of objectives, it is much easier to measure and report. Quade suggests several methods for combining and eliminating multiple objectives: ".....elimination of any objective that is important only as a means to another objective;.....elimination of any objective that will be unaffected by a choice among alternatives;.....selection of a higher level objective to which all of the competing objectives are means (Quade, 1964, pp. 159-160)".

Evaluative criteria. In order to comprehensively evaluate an ongoing instructional system or to compare feasible alternatives, standards for judgment must be established. Such standards are necessary to help determine the relative importance of various outcome measures and to assist in establishing appropriate or acceptable levels of those measures.

An instructional system evaluation plan must consider not only learner performance but cost, time, and value criteria as well. Effectiveness criteria stated in terms of learner performance must reflect standards or norms selected by decision makers. The process used to establish standards and validate measures oftentimes requires considerable attention by many parties.

Consideration of costs, as stated previously, must be made in relation to other factors such as resources, outcomes, and constraints. Time is also closely related to cost, effectiveness, and efficiency. Considerations of time in relation to learners includes measures of total lapsed time (beginning and ending dates), learning time (actual time spent in learning), and retention over time (reliability-stability). Value or utility are the ultimate criteria since the payoff of an alternative to the learner and society must be eventually measured in those terms.

Carpenter and Haggart consider the setting of effectiveness criteria to be a high priority task but one that must be accomplished with care. They recommend "Whatever criteria are chosen, they should only provide general guidelines to the planner, rather than draw fine lines between the acceptable and the unacceptable. This is because the measures available are subject to error and, at the same time, are only proxies for what we would really like to assess.....student learning (Carpenter & Haggart, 1970, pp. 10-11)".

The value-added concept of educational assessment is also an important consideration. The concept does not lead to judgment of alternatives on their outputs alone, but by their outputs relative to their inputs. Learner change (in relation to learner capability) attributable to the effects of an alternative is the sought after measure of educational value added.

As stated previously, no single measure of effectiveness can tell the entire story of the value or worth of an alternative because any instructional alternative generally promotes several different kinds of change in learners. Since the changes are varied and differ in kind, no single proxy measure can be used to represent all the changes attributable to the alternative. The effectiveness model should therefore allow output measures to be displayed as a set of measures and indicators.

Further discussions of evaluative criteria can be found in sections in the texts by Quade (1966, pp. 8-12) and Banghart (1969, pp. 42-46).

Prediction. There is one major concern about the design and use of effectiveness modeling procedures. A simulation of costs and effectiveness of most instructional alternatives is difficult since valid predictive relationships between instructional inputs and process on one hand and instructional results or outcomes are nonexistent. *Ex post facto* effectiveness analysis is less speculative but still contains problems of measurement, attribution, and comparison. Barro has stated the problem quite nicely:

> The methodology of resource and cost modeling is relatively advanced as a result of much work in other fields and is available for application to school district planning. The methodology of "effectiveness" modeling is relatively underdeveloped both in education and in other fields. In education, in particular, conceptual advances and considerable empirical research will be required before it is possible to establish valid predictive relationships between program characteristics and educational results (Barro, 1969, p. 65).

Perhaps the best that can be accomplished in predictive comparisons of the effectiveness of instructional alternatives are qualitative estimates of the degree to which each alternative will contribute to the achievement of specified objectives. Prior experience and data from related studies will help with these estimates but they will nevertheless remain crude estimates for the foreseeable future.

Feasibility Analysis

The first section of this review was devoted to an analysis of systems analysis. Some mention was made about decisions involved in designing the structure of an anlysis and selection of an approach, but little was said about the basis for those decisions. Why is one approach more appropriate? Why is one type of analysis most suitable? What needs to be considered before goals and objectives are specified and alternatives can be considered? Each of these concerns and many others make up the domain of feasibility analysis.

Preliminary feasibility studies can lead to tentative determination of the level, function, purpose, approach and type of analysis. Once these tentative decisions have been made, emphasis can be shifted to the specification of goals and/or objectives for each alternative. Based on initial analyses and generation of alternatives, a decision maker often is forced to revise these program goals and objectives because of unrealistic expectations. Often both objectives and alternatives will need to be revised if a feasible solution is to be identified. This process of analysis, generation of alternatives, and subsequent revision should not be looked upon with disfavor. Hitch & McKean state: "It can in fact be argued that the chief gain from the systematic analysis is the stimulus that it provides for the invention of better systems (Hitch & McKean, 1960, p. 187)".

Feasibility can be broken into two general categories - constraints and capabilities. Both have been mentioned throughout this review but additional emphasis is warranted.

Constraints. Constraints can be defined as conditions existing both within and outside a system which can limit the achievement of specified objectives. These usually include time, manpower, political, financial, and other resources. Uncertainty, depending upon the nature of the problem, can also present serious constraints for the identification of feasible long range alternatives.

Determination and selection of a preferred alternative must, however, eventually be made from a set of feasible alternatives. Most professors or program managers can think of highly desirable alternatives that for obvious reasons are not possible. It is necessary for both analyst and decision maker to carefully consider any constraints or factors that determine which alternatives are feasible and which alternatives are not. Judy (1969) has outlined seven general constraint categories that can serve as review guidelines. He lists them as: (1) technological constraints, (2) policy constraints, (3) political constraints, (4) organizational, constitutional, and legal constraints, (5) resource constraints, (6) target constraints, and (7) imaginary constraints.

A constraint identification and analysis procedure such as one discussed by Beard et al. (1971, p. 43-46) will assist in developing strategies for determining whether a felt constraint is real and for dealing with those which prove to exist.

Capabilities. Just as constraints have the potential for inhibiting specified activites, capabilities have the capacity for assisting the accomplishment of identified objectives. Consideration of potential inherited facilities, equipment, personnel, etc. was discussed in the cost model section. An existing instructional system is a possible source of such inheritance or as a feasible future alternative. Carpenter & Haggart comment on such a possibility:

> In educational planning, one alternative, simply to continue current practice, should be included for baseline data. Although this alternative will usually not incur the same cost as will the innovative programs being compared, it is important to know its projected future cost and effectiveness so that the added resource and cost requirements incurred by the innovative programs may be estimated. Then the incremental requirements that are associated with improved effectiveness will be known. (It often turns out that these incremental requirements are small compared with the requirements simply to maintain current practice, even though they might seem large when considered in isolation.) Thus the first step toward cost-effectiveness analysis must be to estimate the future resource requirements and effectiveness of current programs (Carpenter & Haggart, 1970, p. 12-13).

This applies only if continuation of programs is to be considered or if current programs indeed exist.

Documentation. Feasibility assumptions must be reported as part of an analysis just as are effectiveness and cost data. Regardless of the level, function, or purpose, upon the completion of a thorough analysis of alternatives, the analyst or analysis team is required to make recommendations based on the results of the analysis. Recommendations submitted by the analyst(s) must be accompanied by sufficient documentation. It should include the assumptions under which the analysis was made, the purpose(s) for the analysis, the methodology, the approaches used, and the conclusions reached. Any limitations that were placed on the analysis or any limitations that should be placed on comparisons of the alternatives should be listed so as to lessen the possibility that improper assumptions will be made by decision makers.

Carpenter and Haggart provide some guidelines for systems analysis documentation:

> In the presentation of the analysis, the qualitative considerations should be identified. This includes both those taken into account in the analysis and those that could not be made an integral part of the analysis itself. It is important to present the results of the formative quantitative analysis, and interpret the results with special attention to the assumptions and limitations of the analysis. In

> addition, the analysts should attempt to identify the important qualitative considerations that the decision makers should try to take into account (Carpenter & Haggart, 1969, p. 5).

Results Of Applications In Higher Education

This section contains a selected review of reports of promising applications of systems analysis techniques and models. It is restricted to higher education and does not contain reviews of reports of elementary and secondary education studies nor those on post-secondary vocational education. However, much of the systems analysis literature in these areas is relevant to teacher education. Those of considerable interest include a Ph.D. dissertation by Lovell (1971), a report of the application of a predictive cost effectiveness model to Title I projects by Abt (1966), a much discussed paper by Alkin (1969), and a well written technical paper by Temkin (1970). Significant documents related to systems analysis of vocational education include a paper by Kaufman (1968), a report of a comprehensive study conducted in Pennsylvania (Hu, et al. 1969) and a report of a cost-effectiveness study conducted by Kraft (1969) in Florida.

Jurisdictional Cost Studies

A cursory review of costs studies conducted in higher education would lead one to believe that little remains to be done in the area of unit cost analysis. One study alone contains a selected annotated bibliography with eighty-six entries —— most of them published during the 1955-65 decade (Jones, 1965).

One major problem with most of these studies is that they are based on jurisdictional costs (costs within specific academic units) rather than functional (output oriented) costs. Few of those using functional costs give any attention to research and development costs. Witmer (1967) and Chappell (1970) have discussed the history of the development of cost analysis and unit cost studies in higher education. Several of the more relevant studies are worth noting.

In a study published by the Western Interstate Commission for Higher Education, Kettler (1960) discussed the need for analysis of factors affecting instructional costs. His review of the early studies of these factors and of the nature of each factor served as the basis for his explanation of the effects of class size and faculty teaching load on instructional costs.

Procedures used at Wayne State University to compute direct cost of instruction for both department and student levels were reported by Hubbard (1962). He explained how personnel cost data are obtained through faculty estimates of percentage of time devoted to instruction, research, public service, administration, and other activities.

Russell (1959) used student credit hour production, instructional salary expenditure per student hour, and average size of classes weighted according to the number of credits each class carried as measures for indicating cost break-even points for instructional programs in universities.

Business and industry have employed break-even analysis for many years. Applications of the process to instructional development problems are rare. Translating a chapter on "Costs-Volume-Profit Analysis" (Li, 1966, pp. 344-372) into educational cost-effectiveness analysis terms results in considerable revision. The theoretical break-even point or region where cost and revenue projection lines meet becomes a much broader range in education where projected incremental costs, predicted effectiveness, and volume of students interact.

Witmer (1967) conducted an extensive unit-cost study of the University of Wisconsin system. He intended to use the data to investigate policy formulation, evaluate efficiency, study alternatives, and establish a base for a program budgeting system. His measures included faculty salaries, number of students per section, number of units per day and instructional strategy mix.

Although Witmer (1967) included efficiency as a concern in his study, a recent book is devoted entirely to the question of efficiency in higher education. Bowen and Douglass (1971) conducted a theoretical study on comparative instructional costs for different ways of organizing teaching-learning in a liberal arts college. Their approach to solving the problems of financial stringency in colleges and universities is to improve operating efficiency (the ratio between cost and output). The authors studied six different modes of instruction they felt were both educationally and economically promising. One of the methods is an eclectic model which builds on the strong compatible features of the other five models.

They considered gross estimates of direct instructional costs and indirect costs as well as some feasibility factors such as instructor acceptance of different modes of instruction. Their comparison approach simulates differential cost requirements as the modes of instruction are altered. From an instructional systems analysis viewpoint, their analysis and comparison of alternative cost is well worth noting.

Bowen & Douglass also listed nine potential alternative modifications of instructional resource allocations which could alter costs, thereby modifying efficiency. Each is a viable alternative, but for an analyst or decision maker to make the inappropriate assumption that each will either maintain or increase instructional quality under all circumstances is folly.

Modes of instruction examined in their study included some of the following input changes:

1. Substitute low-cost labor for high-cost labor, e.g., by replacing faculty time with assistant time or by increasing the proportion of junior members in the faculty.
2. Increase intensity of labor usage, e.g., by raising teaching loads for faculty.

3. Substitute student initiative for faculty supervision, e.g., by making study more independent.
4. Substitute capital for labor, e.g., by using the library or television in place of lectures.
5. Intensify utilization of capital, e.g., by using buildings and equipment more fully.
6. Substitute low-cost capital for high-cost capital, e.g., by employing temporary buildings, reducing standards of construction, or cutting down on expensive library acquisitions.
7. Change curricular mix, e.g., by increasing enrollment in low-cost subjects (sociology) and by reducing it in high-cost subjects (physics).
8. Reduce non-instructional services.
9. Spread overhead cost by increasing the scale of operation (Bowen & Douglass, 1971, p. 6).

Output comparisons consisted of unit cost data such as cost per class and cost per student course enrollment. Their only consideration of effectiveness was the assumption that quality of education would be maintained or improved with varying increases in efficiency. A comprehensive system analysis will need to consider differential effectiveness of alternatives to a much greater extent than did Bowen and Douglass. One of the planned activities of this project will focus on identifying and specifying feasible instructional resource allocation alternatives for teacher education.

Functional Cost Studies

Several of the more comprehensive educational costs studies, particularly those dealing with mediated instruction, were not based on traditional line-item budget reports. Jones (1965) reported on an instructional system development project conducted jointly by the College of Education, the audio-visual center, and the College of Business at Michigan State University. The actual costs of designing and implementing a number of courses by instructional television, as well as other instructional strategies, were identified and measured. In a later study (Jones, 1969), the Michigan State University closed circuit television system was analyzed in greater detail. More precise data on the costs of producing, distributing, and receiving the ITV programs being produced at Michigan State were obtained through interviews and analysis of various records. Hardware, software, and delivery costs were well documented, but little emphasis was placed on the analysis of developmental costs of instructional modules.

Another educational media cost study rivaling the Michigan State Study for comprehensiveness is one conducted for the United States Office of Education by General Learning Corporation (1968). The study reported an analysis of the costs of alternative instructional strategies which employ media.

The results of the study are reported in three volumes. The first volume consists of a set of guidelines for deriving the total cost of planning, implementing, and operating an instructional media system.

Volume I also includes a summary of cost comparisons of several types of instructional systems designed to perform the same task. It also includes recommendations which can result in cost savings when media systems are used. These recommendations are in the areas of media utilization, application of new technology, and educational system organization. Volume II consists of the technical material and data on which the cost comparisons are based, and Volume III is a report on computer assisted instruction.

Variables considered in the cost analyses include the average length of instructional units, quality of production, type of program, and the type of the media or delivery system employed. Media costs were based primarily on hardware cost rather than design and production of software.

Problems With Costs

To temper the zeal with which these analysts approached cost analysis, a comment on the shortcomings of cost analysis and unit cost data and the use of such data is in order. In a Journal of Higher Education article, Hull (1961) ably reviewed many of the undesirable characteristics of unit cost studies. He pointed out that unit cost data are quantitative and not qualitative. He also noted that present quantitative measures pertaining to educational outcomes are less than precise. He related that improper assumptions, interpretations, and comparisons can be made by well-meaning but misinformed decision makers. Hull also cautioned that the positive benefits of cost studies far outweigh the disadvantages and the need is for more refinement in unit cost study construction, more understanding of the nature of cost studies, and more careful consideration of limitations of cost studies by decision makers.

One of the justified criticisms of the use of systems analysis data in education is the difficulty of analyzing and evaluating process. In a support paper prepared for the President's Commission on Instructional Technology, Speagle (1970) explained the difficulties that exist in transfering the cost-benefit techniques of business and defense to education. He also reviewed specific pioneering cost-benefit studies, particularly those aimed at evaluating new instructional media. His overall conclusion is that meaningful cost-benefit analysis in the most important areas of education is not feasible until a scientific base on educational processes has been established.

Predictive Costs

Building upon the Michigan State and General Learning Corporation Studies, Chappell (1970) designed a predictive unit cost model that can be used in instructional development planning after behavorial objectives have initially been stated and a slide or audio tape-film mode has been selected. Validation studies of his model indicate that all relevant costs incurred from objective selection until validated self instructional modules are ready for use by learners can be predicted within plus or minus 15% of cost analysis results. Cost analysis data which were determined at the end of surveyed developmental projects included costs for faculty and related personnel, carrel equipment, software production and duplication, consultants, facilities modification, validation, and revision.

The model is designed for biological and physical science areas within higher education and generalization to other areas of curriculum development will require model revision. The procedures employed in developing the model are discussed and provide valuable guidelines for cost model builders. Chappell does not consider replacement costs, depreciation, inheritance, or annual and lifetime operation costs.

As stated earlier, a computer-based cost-estimating model for use in predicting investment and annual operating costs as well as total costs of instructional development projects is being developed by the Rand Corporation (Petruschell & Carpenter, 1972). Such a model will assist in financial planning and control but it will still require the user to supply cost estimating relationships and unit cost predictions based on available relevant data.

Neither the Chappell nor the Rand model is designed to supply both predicted costs and predicted effectiveness of an instructional alternative. They are, however, giant steps toward that goal.

Comprehensive Approaches

A university management information system that collects, stores, and distributes needed information simplifies the task of systems analysis. One of the more promising management information systems for higher education is one developed by the Systems Research Group of the University of Toronto. The Comprehensive Analytical Methods for Planning University Systems (CAMPUS) simulation system is designed to help college and university decision makers gain the maximum educational advantage from the resources which are put at their disposal (Systems Research Group, 1970).

The CAMPUS system is designed for simulating the allocation of monetary and physical resources but does not yet emphasize identification and measurement of educational outputs or effectiveness. The system makes use of data already existing in some form on most university campuses. By making use of such information as faculty teaching loads, classroom space, tuition and student credit hours produced, this system does provide unit cost information and other comparative measures of efficiency but it does not provide means of examining effectiveness of cost effectiveness. As of January 1970, the system was being used by a number of North American education institutions and implementation efforts were beginning in more than 20 universities and community colleges (Judy, 1970). Additional review of this system is included in the following section. If these applications continue to concentrate on fiscal and physical facilities information and do not include information on instructional effectiveness, it will be possible to analyze institutional efficiency but a comprehensive systems analysis will not be possible.

The National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission for Higher Education (WICHE) in Boulder, Colorado, has designed a management information system that aids decision makers in looking at both the efficiency and effectiveness of higher education. In addition to their cost and resource allocation interests, an inventory of higher education outcomes is being developed which will contribute to the development of a cost effectiveness management information system (Lawrency, Weathersby & Patterson, Eds., 1970). WICHE was originally established to help colleges and universities in 13 western states improve their educational programs and management systems. The national center (NCHEMS) is developing management tools and procedures that can be used by higher education institutions in all of the United States rather than just the western states.

The focus of the first phase of the output inventory project is to collect data and measures related to students at times of entrance and exit from institutions and to add measures of long-term benefits, later contributions, and other characteristics as they evolve. The inventory is categorized as follows:

I. Instructional Outcomes
    A. Cognitive attributes of students
    B. Affective attributes of students
    C. Tangible attributes of students

II. Instructional Environment Variables
    A. Academic environment attributes
    B. Social environment attributes

III. Research Outcomes

IV. Public Service Outcomes (Huff, 1971 b, p. 15-33).

The rationale for the total system is well stated by Huff. "To examine the costs of educational programs with little or no evidence available related to the outputs of those programs offers relatively little advantage to educational decision makers (Huff, 1971 a, p. 2)." Not only do they propose a system which will measure the influence of an institution on educational outputs and then assign dollar costs to those outputs, they also are developing common data codes and conversion programs which will allow information exchange and comparison between institutions (Lawrence, 1969). It must be emphasized that these two comprehensive systems (CAMPUS and NCHEMS) are designed to provide data for higher education administrators. Neither is currently being used by teacher educators. Both models are discussed in detail in the following section.

SUMMARY

A review of the literature relevant to systems analysis shows no lack of theoretical models. Review of promising applications of systems analysis techniques and models reveals many examples of applications of various components. Large comprehensive management information systems are in various stages of development and will provide needed information for higher level decision makers.

Management information systems are generally not being designed to provide information suitable for use in making instructional design and development decisions for teacher educators. With a comprehensive system, it is not usually feasible to collect cost and effectiveness data at any level below the course level. Supplementary cost and effectiveness analysis procedures need to be developed so as to provide descriptive, predictive, and comparative data appropriate for course, unit, and module level instructional design and resource allocation decisions. Better procedures need to be devised for relating costs, effectiveness, and feasibility considerations for both ongoing and projected instructional alternatives.

This review section has attempted to pull together several separate disciplines. Principles of economics, operations research techniques, and the practices of instructional development have all been considered and an attempt has been made to create a multi-disciplinary approach to decision making for both pre- and in-service teacher education. Grave injustices have been done to each of the so-called disciplines, but if teacher education is to survive, not to mention improve, new approaches to educational management and decision making must be attempted. A concerted joint effort will need to be made by skilled individuals in many fields to help us adapt to the rapidly changing social, cultural, economic, and educational needs of the 1970's and 80's.

V. REFERENCES

Abt, C.C. A cost-effectiveness model for the analysis of title I ESEA proposals, part I-VIII. Cambridge, Massachusetts: Abt Associates, Inc., 1966.

Adair, C.D. Cost analysis of instruction at the University of Arkansas in 1968. (Doctoral dissertation, University of Arkansas) Ann Arbor, Michigan: University Microfilms, 1970. No. 70-17,198.

Alkin, M.C., Evaluating the cost-effectiveness of instructional programs. Washington, D.C.: Office of Education, Bureau of Research, 1969. (ERIC Document Reproduction Service, ED 031 8[illegible]).

Andrew, G.M. CAMPUS-Minnesota user information man[illegible]l. Project PRIME report, number 12. St. Paul, Minnesota: Minnesota Higher Education Coodinating Commission, 1971. (ERIC Document Reproduction Service, ED 055 574).

Ayers, J.B. Estimated costs for the development and operation of the Georgia Educational Model for the preparation of elementary teachers -- a supplementary report. Washington, D.C. : Office of Education, Bureau of Research, 1970. (ERIC Document Reproduction Service, ED 042 699).

Ayers, J.B. & Finnegan, R.J. Selected cost data on elementary education students at the University of Georgia. Office of Education, Bureau of Research, 1969. (ERIC Document Reproduction Service, ED 040 931).

Barro, S.M. Modeling resource utilization in a school district. In S.A. Haggart (Ed.), Program budgeting for school district planning. Santa Monica, California: The Rand Corporation, 1969.

Beard, J. et al. Manual for the resource utilization analysis procedure. Unpublished manual, The Evaluation Training Center, Department of Educational Research, College of Education, Florida State University, Tallahassee, Florida, 1971.

Benson, C.S. The economics of public education. Boston, Massachusetts: Houghton Mifflin, 1961.

Bretz, R. The MODIA questionnaire for curriculum analysis. Santa Monica, California: The Rand Corporation, 1972, No. R-1020-PR.

Bowen, H.R. & Douglass, G.K. Efficiency in liberal education. New York, New York: McGraw Hill, 1971.

Burgett, D. The development of a procedural model for making effectiveness/cost evaluations of occupational education. (Doctoral dissertation, Cornell University) Ann Arbor, Michigan: University Microfilms, 1970, No. 70-24,026.

Cage, B.N. & Manatt, R.P. Cost analysis of selected educational programs in the community colleges of Iowa. The Journal of Educational Research, 1969, 63 (2), 66-70.

Carpenter, M.V. & Haggart, S.A. Analysis of educational programs within a programming budgeting system. Santa Monica, California: The Rand Corporation, 1969, No. P-4195.

Carpenter, M.V. & Haggart, S.A. *Cost effectiveness analysis for educational planning*. Santa Monica, California: The Rand Corporation, 1970, No. P-4327.

Carpenter, P. *Analysis of educational programs*. Santa Monica, California: The Rand Corporation, 1971, No. P-4576.

Carpenter, P. *An overview of MODIA: A method of designing instructional alternatives for air force training*. Santa Monica, California: The Rand Corporation, 1972, No. R-1018-PR.

Carpenter, P. & Horner, B. *The MODIA decision process for developing strategies on air force instruction*. Santa Monica, California: The Rand Corporation, 1972, No. R-1019-PR.

Chappell, W.G. *A model for predicting the unit cost of developing self-instructional materials*. (Doctoral dissertation, Michigan State University) Ann Arbor, Michigan: University Microfilms, 1970, No. 71-18,183.

Churchman, C.W., Ackoff, R.L. & Arnoff, E.L. *Introduction to research*. New York, New York: John Wiley and Sons, Inc. 1957.

Clark, D.G., Huff, R.A., et al. *Introduction to the resource requirements prediction model 1.6*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1973.

Cordes, D.C. *An operational overview of the CAMPUS simulation model. Project PRIME report, number 8*. St. Paul, Minnesota: Minnesota Higher Education Coordinating Commission, 1971. (ERIC Document Reproduction Service, ED 055 573) (a).

Cordes, D.C. *Program costing with the CAMPUS simulation model. Project PRIME report, number 5*. St. Paul, Minnesota: Minnesota Higher Education Coordinating Commission, 1971. (ERIC Document Reproduction Service, ED 055 570) (b).

Dickson, G.E., et al. *The feasibility of educational specifications for the Ohio comprehensive elementary teacher education program*. Washington, D.C.: Department of Health, Education and Welfare, Office of Education, December 31, 1969.

Dorfman, R. (Ed.) *Measuring benefits of government investments*. Washington, D.C.: The Brookings Institution, 1963.

Doughty, P. *Effectiveness, cost, and feasibility analysis of a course in college level geology*. (Doctoral dissertation, The Florida State University) Ann Arbor, Michigan: University Microfilms, 1972, No. 73-10,325.

Doughty P. & Stakenas, R.G. An analysis of costs and effectiveness of an individualized subject offering. In Greta D. Sabine (Ed.) *Accountability*. Homewood, Illinois: ETC Publications, 1973.

Dunaway, G. *A study to develop a formula for distribution of state funds to junior colleges based on cost of programs in selected junior colleges.* (Doctoral dissertation, Auburn University) Ann Arbor, Michigan: University Microfilms, 1969, No. 70-3347.

Eckstein, O. *Water-resource development: The economics of project evaluation.* Cambridge, Massachusetts: Harvard University Press, 1958.

Fisher, G.H. *Cost consideration in systems analysis.* New York, New York: American Elsevier, Inc.,,1971.

Fisher, G.H. *The role of cost utility analysis in program budgeting.* Santa Monica, California: The Rand Corporation, 1964.

Forbes, R.H. *A technique for analyzing the costs of an educational program based on behavioral stated instructional objectives.* (Doctoral dissertation, University of Massachusetts) Ann Arbor, Michigan: University Microfilms, 1970, No. 71-9329.

Frisbee, J. *Analysis of instructional program costs in a small liberal arts college.* (Doctoral dissertation, University of Tennessee) Ann Arbor, Michigan: University Microfilms, 1970, No. 71-17,137.

General Learning Corporation. *Cost study of educational media systems and their equipment components.* Washington, D.C.: Author, 1968. 3 vols.

Gibson, C. *The development of a model for utilising the techniques of cost benefit analysis in the evaluation of vocational programs.* Doctoral dissertation, University of Kentucky) Ann Arbor, Michigan: University Microfilms, 1968, No. 69-15,468.

Haggart, S.A. *Program cost analysis in educational planning.* Santa Monica, California: The Rand Corporation, 1971, No. P-4744.

Haggart, S.S., Barro, H.B., Carpenter, J.A., Rossi, D. & Rapp, M.L. *Program budgeting for school district planning: Concepts and applications.* Santa Monica, California: The Rand Corporation, 1969.

Hitch, C. J. *An application of systems analysis.* Santa Monica, California: The Rand Corporation, 1955.

Hitch, C. & McKean, R.M. *The economics of defense in the nuclear age.* Cambridge, Massachusetts: Harvard University Press, 1960.

Hubbard, R.E. An approach to institutional cost analysis. *Journal of Experimental Education*, 1962, 31, 109-113.

Huff, R.A. *Definition and measurement of the outcomes and activities of higher education.* Boulder, Colorado: The Western Interstate Commission for Higher Education, 1971, (a).

Huff, R.A. *Inventory of educational outcomes and activities.* Boulder, Colorado: The Western Interstate Commission for Higher Education, 1971, (b).

Huff, R., Haight, M., et al. *Implementation of NCHEMS planning and management tools at California State University, Fullerton*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1972.

Huff, R.A., and Manning, C.W. *Higher education planning and management systems: A brief explanation*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1972.

Hull, L.B. Pitfalls in the use of unit-cost studies. *Journal of Higher Education*, 1961, *32*, 371-376.

Hu, T. et al. A cost effectiveness study of vocational education. An unpublished report, Institute for Research on Human Resources, Pennsylvania State University, University Park, March, 1969.

Johnson, C.E. & Shearon, G.F. *The feasibility of the Georgia Educational Model for teacher preparation -- elementary*. Washington, D.C.: Office of Education, Bureau of Research, 1970.

Jones, G. A procedural and cost analysis study of media in instructional systems development. An unpublished report, Michigan State University, East Lansing, Michigan, 1965.

Jones, G. CC TV cost study, 1968-69. An unpublished report, Michigan State University, East Lansing, Michigan, 1969.

Judy, R.W. Costs: Theoretical and methodological issues. An unpublished paper, Department of Political Economy and Center for Policy and Analysis, University of Toronto, May, 1969.

Judy, R.W. Systems analysis for efficient resource allocation in higher education. A research progress report, Institute for the Quantitative Analysis of Social and Economic Policy, University of Toronto, 1970.

Kaufman, J.J. Cost-effectiveness analysis as a method for the evaluation of vocational and technical education. Paper presented at the annual meeting of the American Vocational Association, Dallas, Texas, October, 1968.

Kettler, R.W. The analysis of class size, teaching load and instructional costs. In R.G. Axt & H.T. Sprague (Eds.), *College self study: Lectures on institutional research*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1960.

Kraft, R.H.P. Cost effectiveness analysis of vocational-technical educational programs. Unpublished report, Educational Systems and Planning Center, Florida State University, Tallahassee, Florida, 1969.

Lawrence, B. *Compatible management information system. A technical report concerning the concepts underlying compatibility in the WICHE management information system program*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1969.

Levine, D.M. The emergence of the planning, programming, budgeting, evaluation systems (PPBS) as a decision and control technique for education. Paper presented to the Research Corporation of the Association of School Business Officials, Chicago, 1969.

Li, D.H. *Cost accounting for management applications*. Columbus, Ohio: Charles E. Merrill Books, Inc., 1966.

Lohman, M.A. & Kirkpatrick, C. *A cost analysis of teacher education at the City University of New York*. City University of New York, 1971, (ERIC Document Reproduction Service ED 054 059).

Lorents, A.C. *Faculty activity analysis and planning models in higher education. Project PRIME report, number 6*. St. Paul, Minnesota: Minnesota Higher Education Coordinating Commission, 1971. (ERIC Document REproduction Service ED 055 571).

McKean, R.N. *Efficiency in government through systems analysis*. New York, New York: John Wiley and Sons, Inc., 1958.

Mowbray, G. Systems analysis and the changing role of the business officer in educational administration and planning. Summary of an audio-visual presentation to a meeeting of the Community College Business Officers Association, Glens Falls, New York, October, 1972.

Mowbray, G. & Levine, J.B. *The development and implementation of CAMPUS: A computer-based planning and budgeting system for universities and colleges*. *Educational Technology*, 1971, *11* (5), 27-32.

Petruschell, R.L. & Carpenter, P. *A model for implementing instructional strategies applied to specific courses*. Santa Monica, California: The Rand Corporation, 1972.

Petruschell, R.L. & Carpenter, P. *MODIA applied in the design and cost of an innovative air force course*. Santa Monica, California: The Rand Corporation, 1972, No. R-1021-PR.

Petrushcell, R.L. & Chester, J.M. *Total systems cost analysis*. Santa Monica, California: The Rand Corporation, 1963.

Pfeiffer, J. *New look in education system analysis in our schools and colleges*. New York, New York: The Odyssey Press, 1968.

Quade, E.S. *Military systems analysis*. Santa Monica, California: The Rand Corporation, 1963, No. P-3091.

Quade, E.S. (Ed.) *Analysis for military decisions*. Chicago, Illinois: Rand McNally, 1964.

Quade, E.S. & Boucher, W.I. (Eds.) *Systems analysis and policy planning: Applications in defense*. New York, New York: American Elsevier, Inc., 1968.

Rapp, M.L., Carpenter, S.A., et al. *Project R-3, San Jose, California: Evaluation of results and development of a cost model*. Santa Monica, California, The Rand Corporation, 1971, No. R-672-SJS.

Russell, J.D. Break-even points in the organization of instructional programs. *College and University Business*, 1959, *27*, 25-26.

SDL Systems Research Group. *Campus IX report description manual*. Toronto, Canada: Author, 1973 (a).

SDL Systems Research Group. *Introduction to the CAMPUS planning and management system*. Toronto, Canada: Author, 1973, (b).

Seiler, K.III. *Introduction to systems cost effectiveness*. New York, New York: Wiley Interscience, 1969.

Sorenson, W. A proposed system for predicting costs of vocational education programs in the California community colleges. Sacramento, California: California Coordinating Unit for Occupational Research and Development, 1972. (ERIC Document Reproduction Service ED 073 236).

Speagle, R.E. *Cost benefits: A buyers guide for instructional technology*. Washington, D.C.: Academy for Educational Development, Inc., 1970.

Stromsdorfer, E.W. *Review and synthesis of cost-effectiveness studies of vocational and technical education*. Columbus, Ohio: ERIC Clearinghouse on Vocational and Technical Education, 1972.

Temkin, S. *A comprehensive theory of cost-effectiveness*. Philadelphia, Pennsylvania: Research for Better Schools, Inc., 1970.

Thompson, L.W. & Lapp, P.A. *A method for developing costs in educational programs*. Toronto, Canada: Committee of Presidents of Universities of Ontario, 1970. (ERIC Document Reproduction Service ED 069 214).

Twelker, P.A., Urbach, F.D. & Buck, J.E. *The systematic development of instruction: An overview and basic guide to the literature*. Stanford, California: ERIC Clearinghouse on Media and Technology, 1972.

Witmer, D.R. *Unit cost studies*. Madison, Wisconsin: Board of Regents of State Universities, 1967.

Ziemer, G., Young, M. & Topping, J. *Cost finding principles and procedures*. Boulder, Colorado: Western Interstate Commission for Higher Education, 1971.

APPENDIX II D

COST-EFFECTIVENESS ANALYSIS FOR OPEN LEARNING

COST-EFFECTIVENESS ANALYSIS ALTERNATIVES FOR OPEN LEARNING PROGRAMS

Philip Doughty

Syracuse University

November 1, 1974

504

ABSTRACT: Cost-Effectiveness Analysis Alternatives for Open Learning Programs

by

Philip Doughty

Planners of cost-effectiveness studies within UMA-SUN are faced with several options, according to the author. One option is the selection of variables which are likely to impact on quality and effectiveness. Indicators of quality may be identified from several viewpoints: from that of the psychologist, content specialist, producer/director, instructional developer/evaluator, or student. The author concludes that design, development, production, and operation (delivery) costs for UMA-SUN are influenced by such variables as: length and quality of video production; amount and difficulty of required readings; number and types of assessment procedures; and, amount of student contact with learning centers.

A second option facing the planner of cost-effectiveness studies is where to invest limited resources for such studies. The author suggests four areas as prerequisites for cost-effectiveness analysis: (1) proper analysis of costs for development and operation (delivery); (2) assessment of needs; (3) specification of objectives; and, (4) design of assessment procedures.

A third option is whether or not to examine the cost-effectiveness of extant instructional resources, for the purpose of acquisition decisions. The author offers the caveat that low-cost acquired courses may result in high-cost operations (delivery) of those courses. Long-range implications of course acquisition could be a focus for cost-effectiveness studies.

A fourth option for those who plan cost-effectiveness studies is the extent to which clientele of open learning programs create benefits or costs for other programs. Cost-effectiveness studies could concentrate on benefits derived for existing (conventional) programs, the social benefit derived for a community or state, or the benefit which an individual derives from alternatives among several

programs. Again, the author offers the caveat that the immediate goal for an innovative, technology-based program that requires support from conventional institutions would be: (a) to serve learners not currently being served by conventional institutions, and to document who those learners are and the benefits that they derive from the program; and, (b) to demonstrate benefits accruing to existing programs which outweigh the costs.

The final section of the paper raises questions pertinent to cost-effectiveness analysis for UMA-SUN.

Intended Primary Audience: State University of Nebraska (S-U-N) Staff Members

Potential Secondary Use: S-U-N reports to NIE and U-M-A

Content-Context Descriptors:
Cost Analysis
Cost-Effectiveness Analysis
Open-Learning Programs
Quality/Value/Benefits

Reader Prerequisites: Interest in allocating resources for the purpose of instructional program planning, production, and operation. Prior reading of "The Economics of an Open Learning System" by Richard Attiyeh, (S-U-N report, May, 1974) would be helpful but not essential. This report does not purport to duplicate nor compete with that position statement but does ask questions related to it.

Writer Comment: Ideas, notions and recommendations expressed herein do not necessarily reflect S-U-N input and most likely suffer from a lack thereof. The intent of this brief paper is to provoke in-house discussion, debate, and perhaps consternation. If it stimulates none of those then most likely this all has been a misuse of the writer's and reader's time.

Overview

The paper is organized around three general and hopefully relevant topic areas. The first relates to several indicators of quality instructional programs that impact on various dollar costs. The second concerns a possible political and financial problem for many open learning programs. The third section contains the beginning of a set of cost-effectiveness analysis questions focusing on open learning systems. They are intended to serve as catalysts for the generation of more and better analysis and evaluation questions.

Indicators of Quality: Impact on Costs

If cost analysts were to identify and ask four different groups of professionals to recommend areas where extra S-U-M resources should be allocated in order to influence the quality of a course, the following lists might evolve: (Assume for the moment that such mutually exclusive subsets of professionals exist.)

1. Psychologists/Educational Psychologists: Emphasize long term retention, individual diagnosis and prescription, transfer of skills and knowledge, generalizability, and other similar higher-order intellectual skills.
2. Content Specialists: Insist upon accuracy, realism, proper sequencing, scholarly emphasis, and content stability.
3. Producers/Directors: Utilize quality writers, actors and narrators, well designed sets, realistic sound, appropriate color, and creative editing.
4. Instructional Developers/Evaluators: Generate or select a script (written materials) that will motivate; provide the learner with knowledge of intended goals and related assessment criteria; systematically design or format courses that

include appropriate sequencing of concepts with provisions for review and feedback.

The learner incidentally may reject all this and simply request a program (course) that provides pure enjoyment, comic relief, or escape from reality.

Resource Allocation for Evaluation

No existing "computerized multi-variate cost-effectiveness analysis" program will array a set of options like these and generate a mix that will optimally pair inputs with outcomes. S-U-N planners and evaluators must instead make selections on the basis of needs assessment data, available personnel and facilities, and a past history of design, development, production, and operation variables. Such data, particularly dollar costs for development and operation, are not often analyzed properly or even collected thereby denying planners the data needed for making valid cost predictions.

The other side of the predictive cost-effectiveness analysis issue also merits brief discussion. Predicting outcomes of even well defined instructional strategies is a task reserved for a resident Picasso. On the other hand, rigid prespecification of learner outcomes and standards regardless of cost is best reserved for trainers of parachute packers. There are several areas within this purview where S-U-N evaluation staff might be well advised to allocate time and resources.

Given current S-U-N programs and personnel, it is important for evaluation team members to consider the many alternatives open to them. Long range vs. short range, description vs. comparison, cognitive learner outcomes vs.

societal benefits, and dollar costs for tuition vs. total opportunity costs are all examples of potentially useful evaluation studies. Just where and when to invest valuable evaluation staff time is perhaps one of the most difficult resource allocation problems.

Perceived Value of Courses

Another subset of the larger quality question is particularly interesting. That subset includes the rationale potential learners use to judge the value of a course. To analyze this question, economists might argue for a global (absolute) approach i.e., "Given an infinite variety of ways to spend my time and money, should I invest in that course?" Many educators on the other hand might recommend a more restricted (comparative) view: i.e., "Given the range of educational options open to me, which course or program or university should I embrace." The outcomes of a value analysis from either perspective could possibly help S-U-N planners select, design and "market" courses.

For example, a potential learner's perceived value or utility of a course may be influenced by a number of variables that impact on dollar costs. The length and quality of video productions, amount and difficulty of required readings, amount of writing, number and type of assessments, and amount of required contact with regional learning centers will likely influence initial and subsequent enrollments. They will without a doubt influence design, development, production and operation costs.

At this time, we can only speculate on whether the learner's value criteria are absolute (too much or too little), comparative (competing courses and programs), or a bewildering combination of standards, needs and expectations. Systematic speculation may be better than counting on serendipity but neither can compete with well organized data - - particularly when that data relates directly to high priority questions.

From a cost-effectiveness analysis perspective, attention paid to needs assessment, objective specification, assessment procedure design, and comprehensive validation are essential. Needless to say they are also relatively costly and laborious activities. Without these, validation and evaluation of course components, courses, and programs are impossible. Without these, defenses for quality programs, comparisons of alternatives, and cost-effectiveness analyses cannot be conducted. Conversely, it makes little economic sense to invest time and dollars in "validating" an expensive video component of a course if the intent is to revise that component when it doesn't produce. It does, however, make good sense to test that component to identify weaknesses which can be remedied via adjunctive materials providing review, feedback, remediation, and practice exercises. Of course these materials boost the amount of recurring and variable (with enrollment) operation costs of a course but it is unrealistic to expect even a thrice revised video package to carry the total instructional load for most courses.

Adaption-Adoption-Collaboration

Planners for open learning educational alternatives like S-U-N and U-M-A should continue to make every effort to identify and analyze both the costs and potential benefits of using already existing facilities and programs. The temptation to incorporate or collaborate is great since initial investment and/or phase-in costs are often relatively low. At second glance, however, these low cost windfalls can lead to high cost repetitive maintenance, replacement, and other operation expenses over time. This does not necessarily suggest that building collaborative networks with existing production agencies or delivery systems is unwise. It only presents the case for thorough examination of long range implications of such liaisons.

It makes little sense economically to procure existing programs and then proceed to spend considerable monies revising the video components. This is particularly true if time and the number of courses ready for use are both scarce. Assuming that the programs meet some predetermined content and production quality criteria, cursory analysis would suggest that considerably less time and dollars could be spent revising assessment procedures course guides, and vital adjunctive instructional materials. This obviously requires considerable compromise by content specialists, producers, directors, et.al., but in the end the outcomes may be nearly the same. This is an alternative that could merit a dash of empirically based analysis.

Potential Problems

One potential political and financial roadblock lies directly ahead for open-learning type programs. Assuming that new programs will require external dollars to offset initial startup costs, the problem then focuses on the financial relationships between open learning systems and extant conventional post-secondary institutions. Those courses or course sequences that offer potentially significant economies of scale for open-learning/high technology programs are oftentimes the same courses that provide considerable income for conventional departments and colleges (i.e.: basic english, foundations of psychology, introduction to American History, political science, biology, etc.).

A Dean supporting liaisons with non traditional educational programs may very well be cutting the financial heart and recruiting foundation out of a department or school at a time when students are becoming increasingly scarce. If commensurate benefits are not identified, a lack of support or outright opposition will be forthcoming. This has implications for many cost related issues: broad base funding support at state and national levels, acceptability of transfer credit, accreditation, and content specialist/academic department support.

If open-learning systems do in fact cater only to learners not currently being served by conventional institutions or if they serve as a recruiting vehicle for conventional programs, then this potential for competition and conflict ceases to be an issue and instead becomes a basis for considerable academic and political support. This somewhat negates defensable open learning program verbage about generating worthwhile alternatives and autonomy but political and financial realities may force planners to temper those notions for the immediate future.

The immediate goal for innovative, technology-based programs that require support from conventional institutions then may not be to advocate and promote efficiency or productivity since those notions may very well fall upon threatened ears. The challenge could be to design, produce, and promote efficient and effective programs for potential learners not currently being served.

Questions With Cost Implications

The following cost-effectiveness analysis oriented questions may be worthy topics for S-U-N planning and evaluation staff considerations:

1. What should be the basis for tuition in non-credit, non-degree oriented courses? Perhaps: a) hours of broadcast time, b) objectives accomplished, c) course credit equivalents, or d) course enrollment?
2. What might be the impact of an intensive cost-shifting policy, i.e., requiring learners to pay for goods and services normally provided by conventional programs? This may help cut direct program costs but may negatively influence enrollment or learner affect.
3. What is an optimal range of time and dollars expended for course planning compared to development or production? Which of those functions impact most on total dollar costs for course implementation and operation? What is a realistic cost range for evaluation and/or cost-effectiveness analysis studies?
4. How long must comparative studies on retention, application, etc. be continued before the data will help to substantiate or refute arguments for high cost programs? Can high quality programs be defended using only short duration assessment data?
5. Will high quality programs aimed at creating positive affect influence re-enrollment rates in non-credit courses? In credit courses? In degree or credentialling programs?

6. What will be the impact of different types of courses on the operation costs of learning service centers?
7. How do you justify maintaining a relatively high cost television production facility if high-quality course productions become unfeasible or unfundable? What kinds of resources are required to adapt existing programs for open-learning environments?
8. Can cost-per-thruput (cost per student credit hour) measures be used to make valid comparisons between unlike instructional programs? Between relatively similar programs? Are there alternatives to the use of such measures?

Comment

As governing systems like U-M-A grow stronger, subsidiaries like S-U-N will be required to give up some autonomy in exchange for increased access to learners and programs. Theoretically this will lead to the economies of scale required to justify considerable expenditures for design and development of quality programs. Without the economies offered by consortia or networks, it will be difficult if not impossible for S-U-N to compete financially and politically with actual or theoretical alternatives that emphasize lower cost technologies and adaptations of existing programs.

APPENDIX III

FIVE YEAR CASH FLOW MODEL

Model Regional Open Learning System

Model State Open Learning Delivery System

FIVE YEAR CASH FLOW MODEL

1975 - 1979

Model Regional Open Learning System

FIVE YEAR CASH FLOW MODEL ASSUMPTIONS

A number of assumptions were made in the process of building the following five year cash budget for UMA and SUN. Each assumption is identified below.

Cost Centers

Expenditure object numbers are those presently used by the University of Nebraska. The cost centers for UMA are two: Administration and Course Development. Administrative cost centers are detailed in the following index. Cost center for Course Development were projected for each course development type, and total costs were calculated according to the course production schedule contained in the following budget projection. The three cost centers for SUN are: General Administration, Academic Services, and Student Services.

Tuition Income

In keeping with the plan to charge varying tuition rates dependent upon factors such as type of course and ability of the student to pay, several tuition rates will be employed. For the purpose of this budget projection, tuition income was calculated at an average of $18 per credit hour for the first six months of 1975 and an average of $20 per credit hour thereafter. The audit rate is calculated at 75% of the regular tuition rate; it was also assumed that non-credit course income will average $25 per course. Student credit hours were calculated by estimating the number of students who would take courses using a formula based on market surveys of adult interest in open learning courses. It was also assumed that 60% of the adult learners would enroll for credit, and 40% would audit the course on a not-for-credit basis.

Materials Fees

It is assumed that course materials will be charged to students at SUN/UMA cost. Great Plains National will distribute these materials and a modest handling charge will be included in the total kit charge made of students. It is assumed also that materials costs will vary from course to course. Total course materials costs are listed in projected expenditures at the same amount as student fees in projected income.

State Appropriation

The present assumption is that SUN will receive $1.25 of state appropriation for each dollar of tuition including audit income collected. This income is expected to start with the fiscal year 1975-76.

Learning Centers

The SUN plan calls for 18 learning centers to be strategically located throughout Nebraska. It is assumed that each learning center will have a coordinator and an assistant. It is also assumed that these centers will operate in cooperation with other post-secondary institutions within the state, thus affording certain cost sharing. Each learning center will have a full set of course materials, including audio and video cassettes where a part of the course.

Faculty and Graduate Assistants

Operating costs for faculty and graduate assistants included in the course delivery system were calculated by assuming each course would require a .75 FTE faculty member and a graduate assistant at .5 FTE.

Telephone

The plan calls for use of WATS lines for communication between faculty and students in Nebraska. It was assumed that lines would be added as numbers of students increase in order to facilitate communication by minimizing busy signals.

Lease Income

It was assumed that courses will be leased throughout the country. Total lease income is estimated on the basis that UMA will average $3,000 on each course lease. Actual lease agreements will vary according to different circumstances, but the average is projected at $3,000.

Course Development

A basic assumption is that UMA will develop 11 courses per year, and that 55 courses will be produced during the 5 year period. Specifications of the number of courses by type to be produced each year has also been projected; complete details are shown in the course production section. The full production cost of each course is included in the year that production is scheduled to start. This same assumption applies to course revision costs.

Projected Support From UMA Institutions

The plan assumes an "in-kind" contribution in 1975 of $5,000 per UMA state, and an additional $20,000 for delivery system planning in states other than Nebraska. After 1975, the plan calls for support either in the form of participant contributions, formula support, or course lease arrangements or agreements, increasing each year and leveling off in 1980 at $150,000 per state. Members of UMA making participant contributions will be exempt from lease charges with the payment of their annual contribution.

Constant Dollars

The 5 year budget was built by presenting personnel costs in terms of 1974 dollars and by making one "formula" increase for each department. Application of the formula to personnel costs results in all operating expenses being state in 1975 dollars. No attempt was made to adjust for inflation over the 5 year period. The formula increases for 1975 are based on actual salary increases approved for University of Nebraska employees for the July 1, 1974 - June 30, 1975 fiscal period.

INDEX

A. MODEL REGIONAL OPEN LEARNING SYSTEM - UMA

  I. ADMINISTRATION

    A. General Administration

    B. Academic Administraton

    C. Public Affairs & Information Services

    D. Course Acquisition

    E. Production Services

    F. Research and Evaluation

    G. Instructional Design

  II. COURSE DEVELOPMENT COSTS

    A. Twelve-Month TV

    B. Eleven-Month TV

    C. No TV

    D. Acquired/Intact

    E. Acquire/Adapted

B. MODEL STATE OPEN LEARNING DELIVERY SYSTEM - SUN

  I. DELIVERY SYSTEM

    A. General Administration

    B. Academic Services

    C. Student Services

Model Regional Open Learning System (UMA)
CASH BUDGET INCOME

1975 - 1979

DESCRIPTION	1975	1976	1977	1978	1979
Federal Grants					
NIE	$3,582,200	$2,996,600	$2,785,300	$2,537,800	$1,833,600
Other	578,400	520,000	520,000	520,000	520,000
Private Grants	300,000	300,000	300,000	300,000	300,000
Lease Income	60,000	390,000	720,000	1,050,000	1,380,000
Membership Contribution	105,000	250,000	375,000	500,000	625,000
	$4,625,600	$4,456,600	$4,700,300	$4,907,800	$4,658,600

Model State Open Learning Delivery System (SUN)
CASH BUDGET INCOME

1975 - 1979

DESCRIPTION	1975	1976	1977	1978	1979
Tuition	$ 253,800	$ 335,700	$ 434,700	$ 549,000	$ 737,800
Materials	121,800	152,300	197,300	251,000	337,300
State Appropriation	158,600	419,600	543,400	686,300	922,200
Private Grants and Other Income	247,700	245,800	150,400	21,000	-0-
	$ 781,900	$1,153,400	$1,325,800	$1,507,300	$1,997,300

Model Regional Open Learning System (UMA)

CASH BUDGET EXPENSES

1975 - 1979

DESCRIPTION	1975	1976	1977	1978	1979
ADMINISTRATION					
General Administration	$ 427,200	$ 458,600	$ 450,200	$ 439,800	$ 429,200
Academic Administration	600,100	436,400	387,000	351,300	301,900
Public Affairs & Information Services	81,000	80,400	96,400	95,600	96,600
Course Acquisition	50,300	62,700	61,000	60,600	61,300
Production Services	180,400	193,900	194,500	193,900	194,500
Research & Evaluation	299,600	323,500	322,700	322,100	322,700
Instructional Design	92,300	86,500	87,100	86,500	87,100
TOTAL ADMINISTRATION COSTS	$1,730,900	$1,642,000	$1,598,900	$1,549,800	$1,493,300
COURSE DEVELOPMENT					
Course Development Costs	$2,781,000	$2,728,200	$2,740,800	$2,952,900	$2,740,800
Course Revision Costs	113,700	86,400	360,600	405,100	424,500
TOTAL COURSE DEVELOPMENT COSTS	$2,894,700	$2,814,600	$3,101,400	$3,358,000	$3,165,300
	$4,625,600	$4,456,600	$4,700,300	$4,907,800	$4,658,600

Model State Open Learning Delivery System (SUN)
CASH BUDGET EXPENSES

1975 - 1979

DESCRIPTION	1975	1976	1977	1978	1979
DELIVERY COSTS					
General Administration	$ 94,100	$ 109,000	$ 112,000	$ 116,600	$ 140,000
Academic Services	636,700	958,700	1,106,700	1,281,300	1,673,600
Student Services	51,100	85,700	107,100	109,400	146,900
TOTAL DELIVERY COSTS	$ 781,900	$1,153,400	$1,325,800	$1,507,300	$1,960,500

Model Regional Open Learning System

ADMINISTRATION

DESCRIPTION	1975	1976	1977	1978	1979
General Administration	$ 427,200	$ 458,600	$ 450,200	$ 439,800	$ 429,200
Adademic Administration	600,100	436,400	387,000	351,300	301,900
Public Affairs and Informational Services	81,000	80,400	96,400	95,600	96,600
Course Acquisition	50,300	62,700	61,000	60,600	61,300
Production Services	180,400	193,900	194,500	193,900	194,500
Research and Evaluation	299,600	323,500	322,700	322,100	322,700
Instructional Design	92,300	86,500	87,100	86,500	87,100
	$1,730,900	$1,642,000	$1,598,900	$1,549,800	$1,493,300

Model Regional Open Learning System

GENERAL ADMINISTRATION

General Administration includes all basic operations necessary to provide the foundation and general support for all departments and offices of the model regional open learning courseware developer, UMA, and for SUN, the model statewide open learning delivery system. Consolidated into the general administration budget for the benefit of all departments, therefore, are all legal fees, all UMA business and finance staff and purchasing accounting and other business services, rental for all UMA activities not otherwise provided, and management consultants and the National Advisory Council. Such expenditure items as computer time, communications, travel, printing and equipment are pro-rated to each budget division and not conjoined as the above-referenced costs. General Administration is also responsible for liason with all external and internal funding agencies and potential funding sources, relationships with UMA member state and institutions, and long-range planning and development.

Model Regional Open Learning System
GENERAL ADMINISTRATION
Schedule of Operating Expenses
1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$171,200	$182,500	$189,700	$189,700	$189,700
200	Operating Expenses	234,400	256,600	239,900	230,500	219,900
300	Supplies and Materials	1,000	1,000	1,100	1,100	1,100
400	Travel	18,500	18,500	18,500	18,500	18,500
500	Capital Outlay	2,100	-0-	1,000	-0-	-0-
		$427,200	$458,600	$450,200	$439,800	$429,200

Model Regional Open Learning System

ACADEMIC ADMINISTRATION

"Academic Administration in UMA is responsible for all curricular planning, including the work of the UMA Academic Council and course acquistion. Academic Administration also supervises all open learning courseware development, and all course teams report to the Office of Academic Administation. In Addition, the Office of Research and Evaluation, Production Services, and Instructional Design report directly to Academic Administration. This office is also responsible for the coordination of the individual state delivery systems, within academic policy guidelines established by the Academic Council and the UMA Board of Trustees. In this regard, the Office is responsible for the linkage between students in the individual states and the entire academic aspects of UMA, including curriculum planning, courseware development, and research and evaluation. Finally, Academic Administration is responsible for general liaison in academic matters with outside funding agencies, with other open learning programs in the country and abroad, and with institutional members of UMA."

Model Regional Open Learning System

ACADEMIC ADMINISTRATION

Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$317,500	$157,500	$157,500	$172,200	$172,200
200	Operating Expenses	272,800	272,200	222,800	172,300	122,900
300	Supplies and Materials	700	700	700	800	800
400	Travel	6,000	6,000	6,000	6,000	6,000
500	Capital Outlay	3,100	-0-	-0-	-0-	-0-
		$600,100	$436,400	$387,000	$351,300	$301,900

Model Regional Open Learning System

PUBLIC AFFAIRS AND INFORMATION SERVICES

The Office of Public Affairs and Information Services is responsible for coordination of all public information for the Univiersity of Mid-America within the region and throughout the nation, and for SUN within the State of Nebraska. Chief among its responsibilities will be development and dissemination of informational materials explaining UMA, its mission and its services, on the one hand; and on the other providing for SUN in Nebraska the important services related to student recruitment, promotion and general public knowledge of this new opportunity in postsecondary education. Public Affairs and Information Services will coordinate with all the news and communications media and with the educational and public telecommunications industry. The Office will conduct briefings and orientations, and otherwise manage visitors and information requests. It will maintain historical files. The Office will also see to development of a comprehensive plan to promote courses and course enrollments, test the plan in Nebraska and provide it as an exportable model for other states and regions. Careful evaluation of the experiences related to information services will be an important part of the Office's activities, so that resources invested will be used wisely and efficiently.

Model Regional Open Learning System
PUBLIC AFFAIRS AND INFORMATIONAL SERVICES
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$51,400	$51,400	$51,400	$51,400	$51,400
200	Operating Expenses	20,100	24,500	40,100	39,500	40,100
300	Supplies and Materials	600	1,000	1,200	1,200	1,600
400	Travel	3,500	3,500	3,500	3,500	3,500
500	Capital Outlay	5,400	-0-	200	-0-	-0-
		$81,000	$80,400	$96,400	$95,600	$96,600

Model Regional Open Learning System

COURSE ACQUISITION

Course Acquisition is an integral part of the total SUN/UMA open learning system. To the extent that acquired courses can be obtained to fulfill SUN curriculum needs, overall costs of developing the entire curriculum can be reduced; needless replication of suitable extant courseware can be avoided; and cooperative as well as coordinative relationships can be established with institutions and instructional materials producers beyond the SUN/UMA boundaries, thus broadening the impact and potential of this project.

The Course Acquisition Office seeks out and identifies potential UMA courses, processes them through a systematic academic, technical and production evaluation schema, and coordinates formal acquisition, after obtaining the necessary legal clearances.

Model Regional Open Learning System
COURSE ACQUISITION DEPARTMENT
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$30,300	$39,400	$39,400	$39,400	$39,400
200	Operating Expenses	18,400	18,200	19,100	18,700	19,400
300	Supplies and Materials	200	300	300	300	300
400	Travel	1,400	2,200	2,200	2,200	2,200
500	Capital Outlay	-0-	2,600	-0-	-0-	-0-
		$50,300	$62,700	$61,000	$60,600	$61,300

PRODUCTION SERVICES

The Production Services Department provides two functions essential to open learning course development: media production support and media production delivery control.

Production Services is the connecting link between the SUN Course Development Teams, the Nebraska ETV Network media production facilities and staff, and the distribution mechanism of the Great Plains National Instructional Television Library. All print, audio and visual Course Development production needs are channeled through Production Services in order to obtain continuity of efforts within SUN as well as provide a single contact source for Network personnel on production issues. Production Services also houses production support personnel who are not specifically assigned to a single course development team. The functions of rights and clearances, music arrangement and compositon, talent coordination and acquisition, print editing, dialogue direction and newspaper lesson development are centrally located within Production Services and thereby available to all Course Development Teams. This provides for the best and most efficient use of these specialized talents.

Production Services serves as the quality controller for Course Development Teams, and as coordinator and overseer of team production of the various course media components, to insure delivery of master copies of all course media elements according to a schedule which will allow the course duplicator and distributor, Great Plains National, to meet course delivery requirements as established by UMA. Constant liaison between individual course teams, UMA academic administration and Great Plains National is thereby required.

Model Regional Open Learning System
PRODUCTION SERVICES DEPARTMENT
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$151,400	$180,100	$180,100	$180,100	$180,100
200	Operating Expenses	7,300	6,700	7,300	6,700	7,300
300	Supplies and Materials	2,600	2,900	2,900	2,900	2,900
400	Travel	5,200	4,200	4,200	4,200	4,200
500	Capital Outlay	13,900	-0-	-0-	-0-	-0-
		$180,400	$193,900	$194,500	$193,900	$194,500

Model Regional Open Learning System

RESEARCH AND EVALUATION OFFICE

The Office of Research and Evaluation is charged with providing evaluation services of a formative nature to course teams, other evaluation services to SUN administration, and with the development and implementation of a research agenda designed to extend the state-of-the-art in open learning programs. While the budget for each course supports a research associate to conduct formative evaluation for the particular course, there is still a need for a core research and evaluation staff to address those issues which encompass more than a single course. Research and Evaluation provides across-course comparisons of learner outcomes, maintains overall management of achievement measurement development, monitors external summative evaluation efforts, and carries out a variety of special and specified research projects: in addition, the Research and Evaluation Office has the responsibility for all research and evaluation conducted on behalf of SUN, the model statewide open learning delivery system. The attached budget recognized the centrality of these issues to the functioning of SUN and of UMA.

Model Regional Open Learning System
RESEARCH AND EVALUATION DEPARTMENT
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$117,000	$141,500	$141,500	$141,500	$141,500
200	Operating Expenses	164,700	166,400	167,400	166,800	167,400
300	Supplies and Materials	8,700	8,700	8,700	8,700	8,700
400	Travel	5,500	5,100	5,100	5,100	5,100
500	Capital Outlay	3,700	1,800	-0-	-0-	-0-
		$299,600	$323.500	$322,700	$322,100	$322.700

INSTRUCTIONAL DESIGN

OFFICE OF INSTRUCTIONAL DESIGN

The instructional design component of UMA functions in two dimensions: course development and lesson design. The development of each UMA course follows new open learning design procedures which are described by the instructional developer. Through the instructional developer the UMA course development scheme is systematically adapted to the unique need of each subject area. Allocation of time, money, and human and material resources is systematically made within the time frame of course development as a function of instructional design. The design of the specific elements of instruction within each course must not be influenced by a single person. At the same time, the integrity of the course team structure requires unity of expression in communications about design aspects of course development. Included in each course development budget is an experienced instructional designer to provide such course leadership, each contributing experience and expertise to that of the other designers. The group of instructional designers will, in turn, be provided leadership and broad unification of approach through the director of the office.

Counsel and advise to course development teams in specialized areas -- such as computer-assisted-instruction in all its variant forms -- are also direct responsibilities of the centralized office of Instructional Design. In addition, the design of items for both summative and formative testing is a responsibility shared by instructional design with the office of research and evaluation.

Model Regional Open Learning System
INSTRUCTIONAL DESIGN
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$75,400	$75,400	$75,400	$75,400	$75,400
200	Operating Expenses	9,700	8,500	9,100	8,500	9,100
300	Supplies and Materials	400	400	400	400	400
400	Travel	3,200	2,200	2,200	2,200	2,200
500	Capital Outlay	3,600	-0-	-0-	-0-	-0-
		$92,300	$86,500	$87,100	$86,500	$87,100

Model Regional Open Learning System
COURSE DEVELOPMENT
APPROACHES

ASSUMPTIONS:

Each course will have its own budgetary needs and media usages.

There will be great variations in budgetary and production needs within course types.

Each course utilizes a variety of media components.

Students will achieve high learning gains from each course type.

Courses A and B utilize television broadcast materials.

Courses A, B and C are produced by UMA when there are no appropriate extant courses available for UMA use in that subject area.

The course design team determines which components to use and how to employ them.

A, B, C and E courses will undergo prototype testing before distribution.

Research and Evaluation personnel begin their activities for each course the third month of Instructional Design and finish at the end of the first month of revision.

All courses will be offered twice; field test results will be analyzed and courses will be continued, revised or terminated as deemed necessary.

All courses will undergo an instructional design process.

Design and evaluation componenss will remain relatively the same throughout course types A, B, C and some E.

Courses D and E may include television broadcast materials.

Each course will have a Senior Content Consultant Panel.

The Course Development Team delivers one duplicable master copy of each component at the end of production.

Model Regional Open Learning System
SCHEDULE OF COURSE DEVELOPMENT COSTS

1975 - 1979

		1975		1976		1977		1978		1979	
		No. of Courses	Amount	No. of Courses	Amount	No. of Courses	Amount	No. of Courses	Amount	No. of Courses	Amount
A											
Credit	5	1	$ 635,400	1	$ 635,400	1	$ 635,400	1	$ 635,400	1	$ 635,400
Non-Credit	0	0	-0-	0	-0-	0	-0-	0	-0-	0	-0-
TOTAL	5	1	$ 635,400	1	$ 635,400	1	$ 635,400	1	$ 635,400	1	$ 635,400
B											
Credit	7	1	381,700	2	763,400	1	381,700	2	763,400	1	381,700
Non-Credit	3	1	169,600	0	-0-	1	169,600	0	-0-	1	169,600
TOTAL	10	2	$ 551,300	2	$ 763,400	2	$ 551,300	2	$ 763,400	2	$ 551,300
C											
Credit	4	1	194,200	0	-0-	1	194,200	1	194,200	1	194,200
Non-Credit	1	0	-0-	1	86,300	0	-0-	0	-0-	0	-0-
TOTAL	5	1	$ 194,200	1	$ 86,300	1	$ 194,200	1	$ 194,200	1	$ 194,200
D											
Credit	7	2	144,600	2	144,600	1	72,300	1	72,300	1	72,300
Non-Credit	3	0	-0-	0	-0-	1	32,100	1	32,100	1	32,100
TOTAL	10	2	$ 144,600	2	$ 144,600	2	$ 104,400	2	$ 104,400	2	$ 104,400
E											
Credit	19	4	1,130,000	3	847,500	4	1,130,000	4	1,130,000	4	1,130,000
Non-Credit	6	5	125,500	2	251,000	1	125,500	1	125,500	1	125,500
TOTAL	25	5	$1,255,500	5	$1,098,500	5	$1,255,500	5	$1,255,500	5	$1,255,500
	55	11	$2,781,000	11	$2,728,200	11	$ 2,740,800	11	$2,952,900	11	$2,740,800

Model Regional Open Learning System
SCHEDULE OF COURSE REVISION COSTS

1975 - 1979

	1975		1976		1977		1978		1979	
A										
Credit	0	$ -0-	1	$ 86,400	0	$ -0-	1	$ 86,400	1	$ 86,400
Non-Credit	0	-0-	0	-0-	0	-0-	0	-0-	0	-0-
TOTAL	0	$ -0-	1	$ 86,400	0	$ -0-	1	$ 86,400	1	$ 86,400
B										
Credit	1	63,200	0	-0-	1	63,200	1	63,200	1	63,200
Non-Credit	0	-0-	0	-0-	1	28,100	0	-0-	1	28,100
TOTAL	1	$ 63,200	0	$ -0-	2	$ 91,300	1	$ 63,200	2	$ 91,300
C										
Credit	0	$ -0-	0	$ -0-	1	$ 31,100	1	$ 31,100	0	$ -0-
Non-Credit	0	-0-	0	-0-	1	13,800	0	-0-	0	-0-
TOTAL	0	$ -0-	0	$ -0-	2	$ 44,900	1	$ 31,100	0	$ -0-
D										
Credit	0	$ -0-	0	$ -0-	0	$ -0-	0	$ -0-	0	$ -0-
Non-Credit	0	-0-	0	-0-	0	-0-	0	-0-	0	-0-
TOTAL	0	$ -0-	0	$ -0-	0	$ -0-	0	$ -0-	0	$ -0-
E										
Credit	1	$ 50,500	0	$ -0-	4	$202,000	4	$202,000	4	$202,000
Non-Credit	0	-0-	0	-0-	1	22,400	1	22,400	2	44,800
TOTAL	1	$ 50,500	0	$ -0-	5	$224,400	5	$224,400	6	$246,800
	2	$ 113,700	1	$ 86,400	9	$360,600	8	$405,100	9	$424,500

Model Regional Open Learning System
COURSE DEVELOPMENT COSTS

1975 - 1979

Expenditure Object No.	Description	A	B	C	D	E
100	Personal Services	$193,500	$162,400	$104,500	$ 28,700	$113,800
200	Operating Expenses	397,900	190,500	83,200	39,300	152,200
300	Supplies and Materials	11,500	8,900	1,300	3,300	7,000
400	Travel	32,500	19,900	5,200	1,000	9,500
500	Capital Outlay	-0-	-0-	-0-	-0-	-0-
	TOTAL	$635,400	$381,700	$194,200	$ 72,300	$282,500

UMA
COURSE REVISION COSTS

1975 - 1979

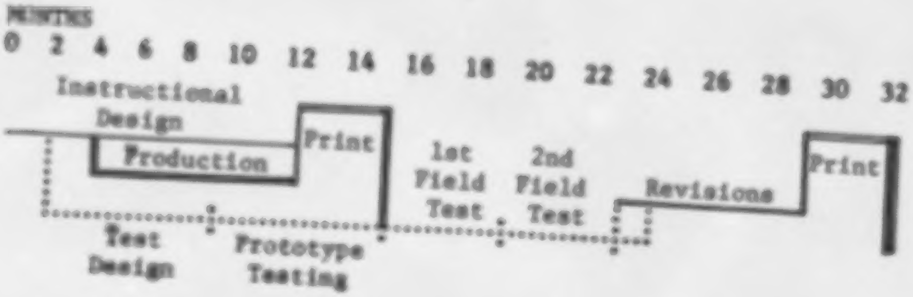
100	Personal Services	$ 46,200	$ 41,000	$ 23,300	$ -0-	$ 33,600
200	Operating Expenses	36,300	18,100	6,400	-0-	13,000
300	Supplies and Materials	300	300	-0-	-0-	500
400	Travel	3,600	3,800	1,400	-0-	3,400
500	Capital Outlay	-0-	-0-	-0-	-0-	-0-
		$ 86,400	$ 63,200	$ 31,100	$ -0-	$ 50,500

Model Regional Open Learning System
COURSE DEVELOPMENT APPROACH

A

Development Approach A always includes television as one of its lesson components. This approach is used for a course designed, produced and prototype tested by UMA within a minimum 12 month time line. More time and more production dollars in special personnel and production areas and a minimum 7 member Senior Content Consultant Panel are utilized during the developmental period. This course with its unique design/production needs (i.e. creation of a totally new course requiring the larger Senior Content Consultant Panel; travel and on-location production; highly specialized filming as in some scientific areas; and/or the costs of other special development needs) will require input from all involved in its development for the longest period of time of any other course development approach.

TIME LINES


MONTHS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
Instructional Design
Production
Print
1st Field Test
2nd Field Test
Revisions
Print
Test Design
Prototype Testing

Model Regional Open Learning System
COURSE DEVELOPMENT
Schedule of Course Development and Revision Costs
Type A Course

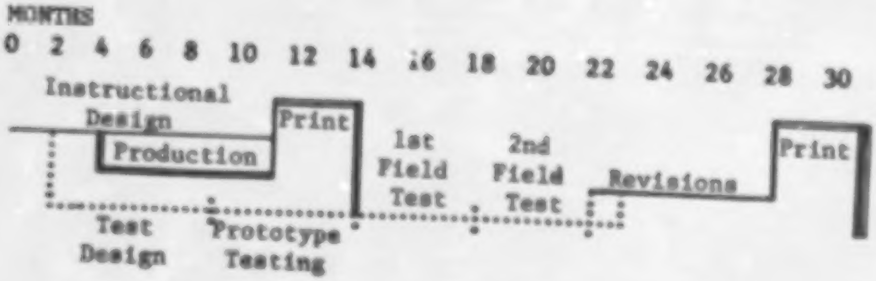
xpenditure bject No.	Description	Course Development Costs	Course Revision Costs
100	Personal Services	$193,500	$ 46,200
200	Operating Expenses	397,900	36,300
300	Supplies and Materials	11,500	300
400	Travel	32,500	3,600
500	Capital Outlay	-0-	-0-
		$635,400	$ 86,400

Model Regional Open Learning System
COURSE DEVELOPMENT APPROACH

B

Development Approach B is used for a course designed, produced and prototype tested by UMA within a minimum 11 month time line. It always includes television as one of its lesson components. It is generally a course with an academically accepted subject matter organization. The content will require minimal on-location or specialized filming, but extensive use of available film footage may be made. Other already prepared materials may also be adopted. This course has a 3 member Senior Content Consultant Panel.

TIME LINES


MONTHS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
Instructional Design
Production
Print
1st Field Test
2nd Field Test
Revisions
Print
Test Design
Prototype Testing

Model Regional Open Learning System

COURSE DEVELOPMENT

Schedule of Course Development and Revision Costs

Type B Course

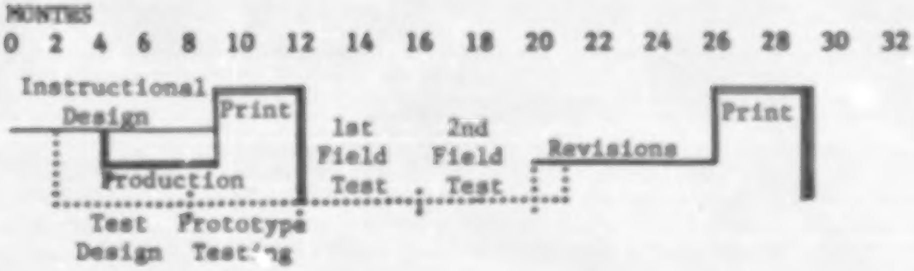
Expenditure Object No.	Description	Course Development Costs	Course Revision Costs
100	Personal Services	$162,400	$ 41,000
200	Operating Expenses	190,500	18,100
300	Supplies and Materials	8,900	300
400	Travel	19,900	3,800
500	Capital Outlay	-0-	-0-
		$381,700	$ 63,200

Model Regional Open Learning System
COURSE DEVELOPMENT APPROACH

C

Development Approach C is used for a course which is produced by UMA, but the content does not require motion visualization for its dissemination. This course could be a print course, an audio course or a multimedia package. Other print, audio components and/or additional components will be developed by UMA. This course's design, production and prototype testing will require a minimum of 9 months for total development. This course has a 3 member Senior Content Consultant Panel.

TIME LINES


MONTHS
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
Instructional Design
Print
Production
1st Field Test
2nd Field Test
Revisions
Print
Test Design
Prototype Testing

Model Regional Open Learning System
COURSE DEVELOPMENT
Schedule of Course Development and Revision Costs
Type C Course

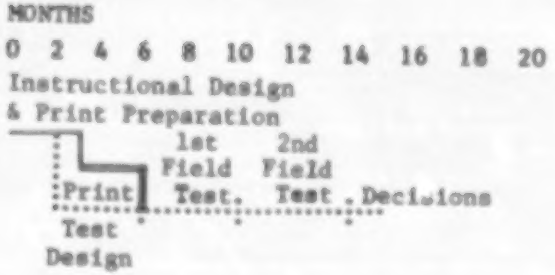
Expenditure Object No.	Description	Course Development Costs	Course Revision Costs
100	Personal Services	$104,500	$ 23,300
200	Operating Expenses	83,200	6,400
300	Supplies and Materials	1,300	-0-
400	Travel	5,200	1,400
500	Capital Outlay	-0-	-0-
		$194.200	$ 31,100

Model Regional Open Learning System
COURSE DEVELOPMENT APPROACH

D

Development Approach D is used for a course which is acquired intact. It can be a TV course, an audio course, a correspondence course or a multimedia package produced elsewhere. No component alteration or prototype testing are accomplished. Only print development or adaptation (i.e. study guide) need be undertaken prior to its offerings. After its two field tests are accomplished, results will be analyzed for continued or discontinued use by UMA or indication of need to adapt through the UMA process. If adaptation is required, the course utilizes Development Approach E. This course has a 3 member Senior Content Consultant Panel.

TIME LINES


MONTHS
0 2 4 6 8 10 12 14 16 18 20
Instructional Design
& Print Preparation
Print
Test
Design
1st
Field
Test.
2nd
Field
Test
Decisions

Model Regional Open Learning System
COURSE DEVELOPMENT
Schedule of Course Development and Revision Costs
Type D Course

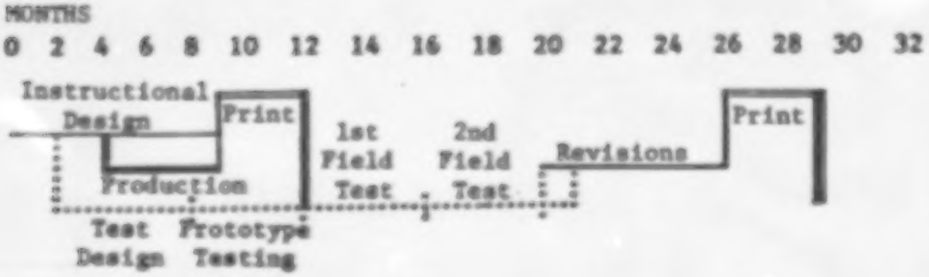
penditure ject No.	Description	Course Development Costs	Course Revision Costs
100	Personal Services	$ 28,700	$ -0-
200	Operating Expenses	39,300	-0-
300	Supplies and Materials	3,300	-0-
400	Travel	1,000	-0-
500	Capital Outlay	-0-	-0-
		$ 72,300	$ -0-

Model Regional Open Learning System
COURSE DEVELOPMENT APPROACH

E

Development Approach E is used for a course which is leased or loaned (perhaps in trade) to UMA. It is UMA adapted. This course may be a TV course, an audio course, a correspondence course or a multimedia package. It will be adapted (designed, produced and prototype tested) within a minimum 9 month time frame. UMA will probably be required to adapt this course's materials for off-campus adult students. UMA will alter and/or create the television, audio and/or other media necessary to accomplish this adaptation. This course has a 3 member Senior Content Consultant Panel.

TIME LINES



Model Regional Open Learning System
COURSE DEVELOPMENT
Schedule of Course Development and Revision Costs
Type E Course

Expenditure Object No.	Description	Course Development Costs	Course Revision Costs
100	Personal Services	$113,800	$ 33,600
200	Operating Expenses	152,200	13,000
300	Supplies and Materials	7,000	500
400	Travel	9,500	3,400
500	Capital Outlay	-0-	-0-
		$282,500	$ 50,500

Model State Open Learning Delivery System

DELIVERY

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
General Administration						
100	Personal Services	$ 72,300	$ 82,400	$ 83,500	$ 83,500	$ 97,400
200	Operating Expenses	16,600	21,500	25,700	30,400	38,600
300	Supplies and Materials	400	600	600	600	700
400	Travel	2,100	2,100	2,100	2,100	2,100
500	Capital Outlay	2,700	2,400	100	-0-	1,200
	TOTAL	$ 94,100	$ 109,000	$ 112,000	$ 116,600	$ 140,000
Academic Services						
100	Personal Services	$ 376,600	$ 619,200	$ 737,600	$ 840,600	$1,044,200
200	Operating Expenses	53,900	69,600	86,300	99,500	124,600
300	Supplies and Materials	124,300	156,500	202,100	256,500	344,100
400	Travel	6,700	10,000	11,600	13,300	16,600
500	Capital Outlay	75,200	103,400	69,100	71,400	144,100
	TOTAL	$ 636,700	$ 958,700	$1,106,700	$1,281,300	$1,673,600

Model State Open Learning Delivery System

DELIVERY

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
Student Services						
100	Personal Services	$ 33,000	$ 62,100	$ 79,100	$ 79,100	$ 103,800
200	Operating Expenses	13,500	18,500	23,400	27,000	36,600
300	Supplies and Materials	300	500	600	600	800
400	Travel	1,200	2,000	2,700	2,700	3,500
500	Capital Outlay	3,100	2,600	1,300	-0-	2,200
	TOTAL	$ 51,100	$ 85,700	$ 107,100	$ 109,400	$ 146,900
		$ 781,900	$1,153,400	$1,325,800	$1,507,300	$1,960,500

Model State Open Learning Delivery System

GENERAL ADMINISTRATION

General Administration is responsible for overall supervision of the new model statewide delivery system which takes UMA-produced open learning courses and sees them provided to the adult student in such manner as to insure successful completion of the educational experience. The Executive Dean serves as the chief academic officer for SUN. General Administration is responsible for all planning, implementation, administration and instructional activities of SUN in the State of Nebraska. This includes maintaining liaison with all colleges and universities in Nebraska and all other educational institutions; serving as liaison between the Delivery System and University of Mid-America Production, Curriculum, and Research; maintaining dialogue with a Nebraska Advisory Council composed of representatives of post-secondary education, lay citizens, business and industry, and the target student clientelle. The two SUN operating divisions of Student Services and Academic Services report to this office.

SUN General Administration assists UMA General Administration and Academic Administration in maintaining liaison with all academic structures of the University of Nebraska system and its campuses, and representing SUN to the Executive and Legislative branches of State government.

Model State Open Learning Delivery System
GENERAL ADMINISTRATION
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$ 72,300	$ 82,400	$ 83,500	$ 83,500	$ 97,400
200	Operating Expenses	16,600	21,500	25,700	30,400	38,600
300	Supplies and Materials	400	600	600	600	700
400	Travel	2,100	2,100	2,100	2,100	2,100
500	Capital Outlay	2,700	2,400	100	-0-	1,200
		$ 94,100	$109,000	$112,000	$116,600	$140,000

Model State Open Learning Delivery System

ACADEMIC SERVICES

The Academic Services Officer represents the chief academic Officer for SUN and has primarily responsibility for the total SUN instructional program. Academic Services supervises the activities of the faculty and graduate assistant personnel associated with each of the SUN courses, and supervises the coordinators and assistants associated with each SUN Regional Learning Center. This office supervises testing activities for each course, the distribution of instructional materials and the evaluation of all enrolled open learners. Academic Services is responsible for all student communications, including the statewide WATS lines. It monitors student curricular needs in terms of future courses to be designed and produced, and delivers student and course feedback to appropriate UMA departments. Academic Services oversees the awarding of student credit, including evaluation of award of credit for worthwhile experience.

Model State Open Learning Delivery System
ACADEMIC SERVICES
Schedule of Operating Services

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$ 376,600	$ 619,200	$ 737,600	$ 840,600	$1,044,200
200	Operating Expenses	53,900	69,600	86,300	99,600	124,600
300	Supplies and Materials	124,300	156,500	202,100	256,500	344,100
400	Travel	6,700	10,000	11,600	13,300	16,600
500	Capital Outlay	75,200	103,400	69,100	71,400	144,100
		$ 636,700	$ 958,700	$1,106,700	$1,281,400	$1,673,600

Model State Open Learning Delivery System

STUDENT SERVICES

Student Services has specific responsibility for the functions of open learning student recruitment, admissions, registration, financial aids, student management, and maintenance of the permanent records of students. Student Services has responsibility for the development of descriptive literature, for the conduct of various open learning promotional activities, and for supervision of the gathering of information for research purposes. This office is also responsible for the preliminary development of the credit by examination program and the credit for experiential learning program.

Model State Open Learning Delivery System
STUDENT SERVICES
Schedule of Operating Expenses

1975 - 1979

Expenditure Object No.	Description	1975	1976	1977	1978	1979
100	Personal Services	$ 33,000	$ 62,100	$ 79,100	$ 79,100	$103,800
200	Operating Expenses	13,500	18,500	23,400	27,000	36,600
300	Supplies and Materials	300	500	600	600	800
400	Travel	1,200	2,000	2,700	2,700	3,500
500	Capital Outlay	3,100	2,600	1,300	-0-	2,200
		$ 51,100	$ 85,700	$107,100	$109,400	$146,900

APPENDIX IV

LIST OF FIVE YEAR TASKS

Appendix IV: Five-Year Tasks

The 27 tasks described in detail in this Appendix constitute the core of the UMA five-year operational plan. The following description of the tasks are essentially as they appeared in the UMA 1975 proposal to NIE.

Task #1: To examine effectiveness of management and procedures in the open learning delivery systems.

The planned delivery systems have many different aspects: central administrative functions, student information systems, courseware delivery mechanisms, advisory functions, faculty roles, etc. In order to provide the kind of model that these delivery systems must be, all of these aspects must be examined for their effectiveness in the light of the characteristics intended for the open learning system. Necessary modification in the delivery systems must be made, where appropriate, in response to this examination.

For example, is a toll-free WATS line used by learners, and more importantly, is it perceived by learners as an aid to their learning and as a contribution to their sense of control of that learning? Does broadcast of television components present problems to learners in terms of access to television sets or disruption of family activities? Are the costs of the various aspects of the delivery systems reasonable in terms of their effectiveness with learners? How may computers be used for student management and administration? How does an open learning delivery system work? Who provides leadership in the separate states? How are private colleges and persons and communities involved? What is the role of libraries in delivery system operation? These are but a few of the questions which must be addressed in the various states, in cooperation with the Office of Research and Evaluation and the Office of Business and Finance, to arrive at data which can be used in reviewing and revising delivery management and procedures.

The outcomes of these examinations would result not only in necessary modifications of the system, but also in recommendations useful to other states as their own delivery systems are established.

Task #2: To determine the effectiveness of learning centers.

While this task could have been subsumed under Task #1, the learning centers and their operation are such a major part of the delivery system concept, and represent such a major share of delivery system cost, that learning centers have been identified as a separate issue to be addressed.

Major questions which must be answered through evaluation are: Do learners use the learning center, and if not, why not. Is use of the centers a function of the characteristics of the target populations, the individual course requirements, or both? Are there problems of physical access? Does the learning center seem too much like a regular "campus"? Is the staff too unresponsive or too busy to help a learner with an immediate problem? Does the learning center truly perform the educational clearinghouse function? These are questions which can be answered by relatively straight-forward surveys of learner opinions.

More complex questions arise in connection with the effectiveness of centers in promoting learning and in attracting and retaining the nontraditional adult audience that the open learning system seeks to serve. Correspondingly more sophisticated measurement instruments will have to be designed to try to address the questions of learning achievement and appeal of SUN among students who use the centers as compared with those who do not. The whole question of the relationship between a learning center and other local educational resources (colleges, libraries individuals with special skills and knowledge, etc.) will have to be examined.

All of these issues must be dealt with in the context of the costs of learning centers, so that the results of the task can ultimately inform decisions about the worth and utility of the learning center concept and operation in a statewide open learning delivery system.

Task #3: To develop effective means for training faculty and learning center staff.

The faculty and learning center staff working in the delivery system are the front line contacts between learners and potential learners and the open learning enterprise. If the system is to be open to individual differences, needs, and interests, and if it is to have the willingness and ability to meet learners where they are educationally, these key staff people must be knowledgeable and sensitive.

There are few visible models for personnel working with adults who for a variety of reasons have been unable or reluctant to enter the traditional mainstream of postsecondary education. There are even fewer places which are attempting to train people for such roles.

Much has been learned from the Open University of the United Kingdom about the vital importance of both initial and in-service training of these delivery staff people. During the next five years, UMA must investigate alternative training procedures and evaluate their effectiveness. Systematic feedback from staff and learners about weaknesses in staff preparation will be carefully noted and various options will be explored. For instance, are there available people whose backgrounds make extensive training unnecessary? Is in-service training, after some staff exposure to learners, more effective than pre-service training, which inevitably is conducted in a theoretical atmosphere? How can a model of in-service training best be transported among the UMA delivery systems and elsewhere?

The outcome of this task will be guidelines for training programs which can be used in this model delivery system and can be disseminated to provide assistance to other states seeking to establish such systems.

Task #4: To determine how learner achievement in open learning programs compares with learner achievement in comparable programs in traditional settings.

This issue relates to a number of other issues that will be identified in this five-year plan. Fundamentally, this task represents an attempt to help achieve the intended goal that the academic quality (meaning the academic demands placed on learners) of courses produced by UMA and delivered through its affiliated delivery systems be no lower than academic quality in traditional universities. Given that intended goal, this task is clearly a part of the whole complex of questions related to cost and effectiveness which are to be addressed throughout the five years .

The first step in pursuing this task is to identify "comparable" courses. As in any comparative studies, one must be careful that the comparisons involve only the relevant variables, with other factors held constant. Since many UMA courses will be nontraditional in content as well as format, a careful selection will have to be made of courses to be used in such studies, and careful research designs will need to be employed in gathering data.

Appropriate achievement measures will have to be developed, and appropriate data gathered and compared. Corrections for variety in educational background, goals, etc., will need to be built into the process. Alternate indicators, such as success of former open learning students who later move into a traditional campus setting, may be developed to assist in this investigation.

The outcome of this task will be data useful to course developers, to the delivery systems, and to interested public who will be judging the adequacy of the entire open learning system.

Task #5: To study reasons for completion or non-completion of of open learning courses and programs.

One of the most significant of the intended characteristics of the UMA open learning system is that it will seek to maximize success (defined in a variety of ways) for learners who enter its program. At the outset it must be acknowledged that not all learners may be capable of or interested in completing open learning courses. However, it is incumbent upon UMA and SUN that a determination of the probable causes for lack of completion be made so that the delivery system (and UMA itself) can do everything feasible to eliminate those delivery-related causes which it can control.

As a part of this task, the Nebraska delivery system (in cooperation with the office of Research and Evaluation) must investigate reasons why learners do not complete courses or planned programs, with emphasis on delivery-related factors. If a learner takes a course through SUN and never re-enters the system, is it because the course failed to meet his or her expectations or because the course completely fulfilled the learner's educational objectives? If a significant number of learners fail to complete a given course satisfactorily, that may necessitate revision of the course, or it may point to inadequate advising in the delivery system or to inadequate provision of preparatory materials to assist the learner to get ready for the course.

As a result of this task, UMA and its associated delivery systems will have usable input for policy and operational decisions on recruitment, student information systems, advising, follow-up, and course development.

Task #6: To assist states associated with UMA to establish coordinated state delivery systems.

UMA's goal is to become a fully operational regional open learning system by 1980. A vast range of issues that appear in the UMA five-year plan, including cost-effectiveness determination and knowledge of and feedback from learners, require that UMA move beyond the detailed planning that has been done to date. Only in an operational mode can these important issues be realistically addressed, to the end that the proposed regional open learning system can indeed serve as a model for the development of other such systems, and add to the base of knowledge about postsecondary open learning in America.

Each university participating in UMA's development has indicated its interest in and commitment to expanding opportunities for open learning. Individual state open learning delivery systems may vary, depending on local resources for delivery and state governance structures for postsecondary education, but all will make opportunities available to people in their homes. A survey of available delivery resources in the various UMA states has been made; its results are reported in Chapter VIII. In each state, further planning for development of a complete delivery system is necessary. Such plans must relate to existing continuing education structures and should specify how private and public colleges, libraries, museums, businesses, social agencies etc., can be involved in delivery of educational opportunities.

It has been argued previously, however, that the attainment of UMA's intended status requires that delivery systems have certain common characteristics and that they be developed in a coordinated way to provide linkage between learners, curriculum planning, and courseware development, and to provide opportunities for cost, knowledge, and experience sharing. A collection of completely autonomous delivery systems which merely obtain courseware from an anonymous corporation clearly does not constitute an open learning system with the characteristics intended for UMA, characteristics aimed at providing more effective, more sensitive educational services, to a new population of learners, at relatively lower cost.

Hence, it will be necessary during the five-year period to:

a. Establish policy guidelines for individual state delivery systems;

b. Provide a mechanism for the sharing of technical consultation among member states as delivery systems are developed;

c. Provide funds to the states to assist in these developmental efforts.

In order to achieve these objectives, each state would designate an individual to coordinate the planning of that state's delivery system, which will extend and expand existing mechanisms for delivery of off-campus and continuing education offerings. To achieve desired coordination and to insure meaningful relationships between state delivery systems and UMA planning and management, a delivery system coordinator will be on the UMA staff to work with the state planning officers. The plan for development of UMA delivery systems is to be drawn up during 1975, with NIE funding; the actual creation of the delivery systems will be accomplished primarily from state revenues, with UMA consultation.

As a result of this work, position papers on UMA policy will be developed, based on the experience gained in the model delivery system in Nebraska and on further investigation of other open learning systems and individual state resources. These papers will be the result of joint work by the UMA Academic Council and the individuals selected in each state for delivery system development responsibility.

These state system development officers will be provided technical assistance and funds necessary for implementation of coordinated systems based on these policies. This process will be carefully documented throughout, so that the result in 1980 will be not only coordinated operational state delivery systems but a model for the development of such a cooperative regional open learning enterprise in other places.

Task #7: To determine whom UMA should and does serve.

It is clear that few institutions, including UMA, can be all things to all people, even in a limited sense. We have recognized this by generally identifying our initial target audience as those adults who cannot or are reluctant to participate in traditional programs. While this represents a beginning focus, by 1980 it will be important for UMA to have defined more precisely its intended target population. Such a decision has obvious implications for curricular planning, and for course development. For example, is it reasonable to suppose that UMA will be able to offer courses leading to a real estate license? Or to offer advanced courses in astronomy to individuals interested in graduate work in that field? Or to offer work in auto mechanics?

Yet another way of looking at the same issue: can UMA effectively provide postsecondary education experiences to individuals who have not obtained graduate degrees: Or to individuals for whom English is a second language? Or to residents of urban ghettos? Or to young people still in high school? Or to senior citizens?

One of the characteristics intended for UMA is that the system should be capable of meeting learners where they are educationally, and to respond to what different learners want to learn. This has tremendous instructional implications. UMA must be prepared, both philosphically and through the practical experience of the next five years, to be able to more adequately determine the parameters of this characteristic. Can UMA really meet any kind of learner, where he is?

Another characteristic is that the system should be responsive to individual needs and expectations. During the next five years, UMA must document the range of concerns and expectations held by those who enroll in courses, and must seek to understand the implications of this diversity and to use this understanding in actual operation, in curricular planning, course development, and delivery.

To better understand its clientele, UMA must develop procedures whereby it can continuously monitor the nature of that clientele. This will require the collection over the next five years of data about learner goals, expectations, and characteristics. Such data might be collected through systematic interviews, surveys, observations, and other such techniques which will be devised by the research and evaluation staff, acting with the advice of the newly formed Research and Evaluation Advisory Panel. These experimental data must be carefully provided to the UMA Academic Council, the individual delivery advisory councils, and others charged with forging curriculum policy.

Task #8: To determine the conception or theory of curriculum that will guide UMA curriculum planning and development.

Decisions regarding the curricular philosophy to be employed by UMA will have an influence on course selection and development, delivery systems employed, evaluation techniques, etc. By 1980, UMA should have a well-established stance toward the nature of the various curricula to be developed, and should have made curricular plans according to the conception developed.

As noted in Chapter I of this report, curricula for UMA are to emphasize a mix of courses for which credit could be acquired (or not acquired), and courses for which traditional credit would not be available. In addition, curricula provided through the state delivery systems will include existing correspondence courses, on-campus courses, or independent study courses, when such courses would contribute to meeting individual student goals. This decision should be re-examined periodically in the light of experience with actually enrolled learners, in an effort to compare that curricular philosophy with the expressed needs, interests, and expectations of the learner population.

One aspect of this task involves a systematic examination of the literature in curriculum, to spell out as clearly as possible extant curricular theory and how that theory relates to the mission and direction of UMA. UMA holds promise as an agency that could seriously seek to understand the relationship between theory and practice in this area of curriculum.

More specifically, what should emerge from work on this task is a set of guidelines whereby rational choices can be made about what kinds of courses ought to be developed or acquired, how those courses might be developed to best meet the characteristics of courses within an open learning setting, how courses and other educational experiences ought to be delivered to the intended constituency, how quality in curricula might be determined, and how the experience of curricular planning in UMA can best be documented to the benefit of other prospective open learning systems.

> Task #9: To document as completely as possible what is presently known about how adults learn, and to contribute to an expansion of that knowledge through thoughtful research and evaluation.

Dominant in both the UMA open learning goals and the UMA conception of its characteristics as an open learning system is the idea that open learning must recognize and deal with individuality, that the unique postsecondary learner population UMA seeks to serve will have differing goals, interests, needs, and expectations. Less strongly asserted, but nonetheless implied, is the idea that different adults may learn differently as well. What is an effective learning tool for one adult may not necessarily work well for another adult.

By 1980, UMA should have conducted an extensive investigation of the literature and ongoing research related to adult learning. For example, UMA might investigate what is known about age-related decline in learning ability, and might determine the implications of this research for instructional design with UMA. Some work has been done in this area, but a review as extensive as that implied here has not been done. Of particular importance is a review of what is known about adult learning with emphasis on the implications of that knowledge for curriculum planning for an open learning system.

However, UMA should not merely be a passive recipient of other research. Once UMA becomes operational, the opportunity exists for major experimental research on adult learning in an open learning system. UMA and its related delivery systems provide an extraordinary laboratory for such research. By 1980, UMA should have completed a series of well-designed studies designed to investigate aspects of this issue.

As with other tasks, results from the comprehensive review of extant literature and the conduct of UMA research efforts on adult learning should be provided as input to deliberations about curricula. Such data will also be important to efforts in course development and delivery.

Task #10: To determine the extent to which UMA curricula, and the curricular planning process, are able to respond to the needs, interests, and expectations of learners.

Each of the three preceding tasks related to this element of the five-year plan, while quite different, shares a common concern about planning for curricula that seek to recognize individual goals and expectations, and that seek to reduce unnecessary and arbitrary constraints of time, place, and pedagogy. The tasks focus on providing data that will enable curricular planners to make informed choices about content and procedures, choices that will enhance the probability of realizing these open learning characteristics.

But just as there is a need to make initial estimations about what will work, and, indeed, to make a commitment to the ideal of these characteristics, so too is there a need to establish procedures whereby it can be determined whether the goals implied in these open learning characteristics are being attained. By 1980, UMA will have developed and implemented procedures for determining the extent to which UMA curricula and related delivery systems are indeed responding to learner goals, needs, interests, and expectations. Furthermore, UMA will have created an organizational structure that will insure the use of those data in decision making. And, finally, UMA will have made a commitment to self-examination, so that data of these kinds can have a real, not perfunctory, impact on overall curriculum planning. Such activities again reflect UMA's commitment to experimentation.

A variety of techniques need to be established to accomplish this ongoing reporting system. Survey instruments, as well as interview protocols, need to be established for use in collecting data on learner perceptions of the extent to which their needs are being met. Analyses must be conducted to determine, if possible, which aspects or components of UMA curricula and of the individual state delivery systems are contributing to the learner's sense of control over his own learning, to determine the extent to which the learner is generally satisfied with what he is learning and how he is learning it, and to aid in decisions about continuing (or not continuing) in the UMA program.

This task is directed to a topic slightly different from whether adults learn what was intended. The questions of achievement is an important one, and will be discussed in greater depth in a later chapter. This task is directed at the learner's own sense of what is working and what is not. Some argue that most learners are not able to judge adequately the value or worth of what they are engaged in, that learners often misperceived intentions and outcomes. This task assumes that the learner's perception of things is important, and ought to be utilized as a significant datum in the larger picture of the adequacy of the UMA curriculum.

Task #11: To determine which courses or other learning experiences UMA should develop or acquire, and subsequently to develop or acquire those courses.

Central to this entire five-year plan is the idea that UMA courses must reflect a commitment to meeting learners where they are, in as flexible a manner as possible, but in the context of some kind of curricular philosophy. This task calls for the selection and development of courses which meet the needs and goals of both UMA and individual learners, and which permit experimentation with curricula designed for different groups of learners.

As reported in Chapter I, the Academic Council has identified for planning purposes 55 courses to be developed or acquired during the next five years. Such a development is a large undertaking, and must be carefully and systematically approached. Decisions will need to be made about how best to represent a given body of knowledge, how best to deliver that content, and how best to assess whether learners learn what was intended.

The delivery system provides the primary contact UMA will have with the adult learner, but if what is delivered is not acceptable, the best delivery system in the world will not be sufficient to retain learners. Thus, the task of developing quality courseware during the next five years is extremely crucial.

Task #12: To determine how effective UMA courses are, and to seek to determine what factors (format, pacing, content, readibility, etc.) tend to influence effectiveness with different kinds of learners.

While effectiveness can be described in a number of ways, certain outcome measures are central to determination of the effectiveness of UMA courses. For example, to what extent do learners believe courses are addressing personal goals? To what extent do learners achieve excellence in terms of cognitive outcomes? To what extent do UMA courses enable learners to exercise some control over their own learning?

One of the major aspects of this task is to define alternative means whereby effectiveness can be conceptualized and subsequently measured. To that end, work must be done during the next five years to establish a system of qualitative indicators, to provide continuing information on the effectiveness of UMA courses as a whole, and of particular courses.

Of importance in this element of the five-year plan is an attempt to ascertain the effectiveness of UMA cpurses in a comparative sense: what kind of course, or which approach to course production, seems to yield courses that are relatively or comparatively most effective? Careful comparative studies of various kinds must be conducted throughout the five years. Data from these studies must be provided as input to curriculum planning and course development decisions.

Finally, it will be important to understand what kinds of learners achieve success in courses, and what kinds do not. Studies must be conducted to determine course correlations of learner success and failure.

Task #13: To determine relationships between cost and effectiveness.

This task is, of course, closely related to Task #12. The present task requires attention to three distinct categories of information: What are the costs of developing a course? How effective is the course (see Task #12)? Across courses, what is the nature of the relationship between cost and effectiveness?

The rationale for investigating issues of cost and effectiveness is apparent throughout the five-year plan. UMA has asserted as one of the reasons for its existence a capability to use shared resources in such a way as to lower costs, while improving the quality of instruction available to learners over a broad part of the country. Since UMA potentially serves such a large learner population, it is reasonable to suppose that the demands on UMA to develop courses will far outstrip its financial capabilities. Thus, hard decisions will have to be made about what kinds of courses to develop, and what kind and amount of resources ought to be expended on developing those courses.

Cost effectiveness studies should be instrumental in addressing issues of this kind, and thus provide important data to developers and curriculum planners. The studies should proceed on the basis of best estimates, garnered from experience during the five years and from prior research in the area, as to which kinds of comparison studies would be most likely to produce data useful in course development and useful as a means of expanding general understanding of open learning systems.

Task #14: To determine the potentials and limitations of various media components, including television and computers, in UMA courses.

While some work has been done in the area of guidelines for media selection, considerable experience must be gained in an open learning setting before appropriate guidelines can be devised specific to that setting.

This task addresses the important question of the instructional potential and limitation inherent in a particular medium, and how that potential (or limitation) can be taken into account in the course development process. For example, UMA must become much more clear on the appropriate role television can play in open learning courses. Should television be used primarily as a motivator? Can television be effectively employed to transmit factual information? The research of Schram and Chu, the Children's Television Workshop, the Open University, and others, together with UMA research, must be consulted in the refinement of guidelines for the use of media.

Of particular importance in this task is an attempt, during the next five years, to determine if possible the interactions of learner characteristics and media characteristics. UMA stresses the importance of giving learners options with respect to how they learn, including what pedagogical techniques are most useful with different kinds of learners. UMA must begin to investigate who learns best from what kind, or combinations of kinds of media, with what kinds of content content.

Studies of potentials and limitations must also be linked to cost. Efforts must be made during the next five years to relate the potentials of a given medium to the costs involved in utilizing that medium in UMA courses.

Task #15: To determine the most efficient ways to revise courses to prevent obsolescente and to reflect data on their effectiveness.

As indicated in Task #12, UMA will undertake to study in various ways the effectiveness of its courses. While the data resulting from such studies will be useful in planning future courses, it will also be critical in planning revisions of existing courses. Courses will tend to become obsolete as knowledge continues to expand, or as new instructional techniques become available, thus necessitating periodic revision.

The present plans for course revision incorporate two field tests of a course, following which a decision will be made about the necessity for revision. The criteria by which that decision will be made must be specified, and the amount and kind of revision to be undertaken must then be determined. Throughout this process, the cost of revision must be carefully considered and weighed against the deficencies of the course and the benefits to be derived from making the revisions.

The question of who will do the revision is also a significant one. Should the original course team have this responsibility, or will it be more effective to create a separate team that had no involvement in the course as originally developed?

Since revision costs may be extensive, and since UMA's commitment to responsiveness to learners and to academic quality will undoubtedly necessitate revisions in courseware, this whole process becomes an important one.

The outcome of this task will be decisions on revision policies and procedural guidelines that will be useful to all producers of open learning courses.

Task #16: To determine to what extent and in what ways courses can be designed to provide maximum flexibility in use.

It is UMA's intent to develop courses that provide options for students--options related to content (e.g., learners may wish only part of a course to meet a particular goal) and options related to learning strategy (e.g., different learners may wish to choose different kinds of experiences to learn the same content). Courses must allow for different entry points for learners with various types of educational preparation. And partial credit should be made available to learners who take only a part of a modular course.

This commitment to modularization of courses to increase learner options will necessitate exploration of alternative instructional design procedures for course development. It will also necessitate careful understanding of prospective learners so that their options are clear and they can thus make intelligent choices.

Several courses to be proposed for development are heavily modularized in conception. An introductory biology course, for example, is to be adapted for open learning delivery from the materials developed by the Biological Sciences Curriculum Study of Boulder, Colorado. These materials are based on a highly modularized design. Experience gained from the process of adapting these materials will be invaluable.

Grand Valley College has developed a wide array of course modules that must be studied to find out what we can learn about the process of constructing such courses in the context of a multimedia open learning project.

The outcome of this task will be course development procedures in which modularization occur naturally where ever it will serve course and learner objectives.

Task #17: To determine and document the effectiveness of the UMA course development process, and to refine that process as needed.

UMA has gained valuable experience in course development processes by developing two complete courses (Accounting and Psychology), and by planning a third course (Cultural History of the Great Plains). Each process proceeded somewhat differently, so that three quite different experiences can be drawn upon. Much was learned about how courses are designed, produced, evaluated, and readied for delivery.

Careful attention must be given during the next five years to extend this learning by examining the development processes used in UMA, to spot thos techniques or procedures that seem to work well, and to analyze those procedures which do not seem to work. There are a number of points in the course development process that might be particularly examined. For example, what should be the leadership structure of a course team? What is the most effective relationship of content specialist to designer, producer, and evaluator? At what point is it most profitable to involve producers in the development process? How can content advisory panels be most effectively used? How can persons employed for short-term assignments be incorporated most effectively into course development proceedings? How can new staff members involved in course development be effectively introduced to these procedures?

Data obtained from a systematic examination of the course development process should be exceedingly useful to UMA administrators, and to course development teams. In addition, this kind of data will be invaluable to other agencies that wish to engage in similar kinds of development. Self-examination of process, while often painful, generally yields an increased communication among the in-house staff, which should be instrumental in establishing a policy of spirit of continuous updating and refining of procedures. While standardization in the entire course process may not be desirable, it may be useful to identify those aspects of the process which could be profitably regularized, freeing course teams for more creative work in non-standard aspects of the development areas.

Task #18: To refine the procedures for evaluation, acquisition, and adaptation (if necessary). of open learning courseware produced by others.

A key to the economic success of UMA will be the ability to acquire at reasonable costs existing open learning courseware. A good start has been made on developing a model for the evaluation, acquisition, and adaptation of such materials. But our experience is limited, and this whole process must be refined.

For example, the SUN staff is actively exploring the possibility of acquiring some of the materials developed by the Open University of the United Kingdom. As indicated in a recent ETS study on the use of OU materials in the U.S., such materials will need adaptation for use in open learning programs in this country. At the same time, the Open University is anxious to participate fully in any revisions that are done. A proposal was recently submitted to the Exxon Foundation to develop a joint procedure whereby UMA can make use of these valuable materials.

The whole area of cooperative or joint development of a course from scratch is a form of acquisition that needs further exploration. Initial contacts have been made with KCET-TV in Los Angeles for joint production of a course in 1975 that can be used by UMA and KCET. Such efforts reduce the per learner costs of courseware development and make open learning more viable economically.

During the next five years UMA must continue to inventory existing courseware and develop further its procedures for evaluation, acquisition, and adaptation. Adaptation presents especially difficult problems, since there is always a tendency for people to wish to revise something they did not design. Additional controls will have to be devised to insure that adaptation is necessary before it is undertaken.

Task #19: To determine whether UMA can and should grant credit and degrees.

By 1980, UMA will have decided whether it or its associated state delivery systems will independently grant credit and degrees. This is a central issue that must be resolved in the next five years. It relates to many of the characteristics identified for UMA on the five year plan--the provision of learning opportunities with sufficient flexibility to meet varying needs of adult learners; the focus of UMA on learner achievement rather than on arbitrary requirements; and the cooperative use of resources of existing institutions. Clearly the extent to which UMA can achieve these goals depends on either the willingness of existing institutions to grant credit and degrees for the kinds of learners and learning programs that will be provided through UMA, or on the ability of UMA itself (for each state delivery system) to grant such credit and degrees on its own.

For the present, SUN operations in Nebraska are beginning with credit granted through the University of Nebraska-Lincoln. The UMA Academic Council will, however, study the issue of credit and degree-granting status for UMA in the future. The Council and the UMA staff will carefully analyze the pros and cons of this issue and develop a recommendation for the UMA Board's consideration. Such a recommendation will take into account experience in initial operations as well as the implications that this recommendation will have for cooperative relationships with other postsecondary institutions and for the attainment of UMA's goals.

Task #20: To develop the organizational structure and internal procedures of UMA to insure flexibility in meeting the institution's objectives.

If UMA is to be by 1980 the kind of responsive and responsible open learning system envisioned in its five year plan, much attention must be paid during the next five years to the development of appropriate governance structures and internal procedures. For example, UMA intends to honor its commitment to use an understanding of its learners in the planning of learning opportunities to be made available, and so procedures must be devised which will make data available to decision-makers and will guarantee the use of that data in planning and course development. The role of learners in the whole planning process needs thoughtful attention.

Within the basic governance structure of the UMA Board of Trustees, with the National Council of Advisors (See Chapter V) and the Academic Council providing regular advice on policy and procedures, operational details must be formalized. Such issues as what are the best mechanisms for gathering information and policy suggestions from the experience of state delivery systems and effectively inserting that information into curricular and course planning and development efforts must be resolved.

To this end, the staff, in cooperation with the Academic Council and the Board, will explore alternative organizational arrangements and procedures, and will prepare recommendations that can most effectively guide planning efforts in curriculum, course design, and delivery. These investigations will make extensive use of the experience of SUN and of other institutions developing open learning programs.

This task will result not only in improved procedures and governance for UMA, but also in guidelines usable in the development of other regional open learning systems.

Task #21: To determine the "steady-state" costs of the regional open learning system and compare these with costs of other open learning programs and traditional postsecondary institutions.

By 1980, UMA and its associated delivery systems intend to be operating at a reasonable level of cost, both to individuals and to society. One of the major factors influencing the development of open learning has been the need to find new ways to extend the educational franchise to more and varied people at lower cost. Thus, UMA must continue to analyze total course development and delivery costs, as well as administrative costs, and compare these costs with those of other open learning programs and of traditional institutions.

Detailed planning of projected costs for the next five years has been completed, but only operational experience will reveal whether these plans are realistic. Will learners enroll in the numbers projected? Will UMA courses be sufficiently attractive to generate lease income to offset costs? These are but two of the many questions that can be answered only in an operational mode.

The analysis of costs must also be done in some kind of "steady-state" environment, recognizing that the establishment and development of a totally new enterprise entails large costs that do not continue throughout the life of the organization. It is only by such an analysis that a fair comparison of costs can be made with those of other institutions to determine whether UMA is reaching its intended goal.

The results of this analysis will be not only an accounting which will provide useful data for other open learning systems, but also modification of UMA planning parameters where necessary. For instance, if experience shows that out projections of course development costs or enrollment estimates are incorrect, planing for future courses and other aspects of the UMA operation may need to be changed.

Task #22: To insure that the regional open-learning system becomes "self-supporting" at the end of the five-year development period.

By 1980, UMA and its associated delivery systems fully intend to be "self-supporting" in the sense that continued funding from NIE is no longer required. Clearly this goal is a critical one, and the task of reaching it is closely related to the previous task of analyzing and comparing costs.

As discussed earlier, the consortial funding plan which the SUN staff has been developing during 1974 has demonstrated the possibilities of an expanded fiscal base for the regional open learning system, and the very existence of UMA is an important first step in attaining financial self-sufficiency by 1980. However, it is obvious that attainment of self-sufficiency may be a goal that is in conflict with portions of UMA's conception of its mission. For instance, if the costs of designing courseware having the kind of flexibility that is desired become prohibitive, how can costs best be reduced without undue compromise with the notion of flexibility? Thus the whole question of the financial structure of the system implicit in this and the previous task must be viewed in the context of the system's mission and goals.

During the five-year period, therefore, UMA must continue to analyze income data and sources, costs, and effectiveness, in order to arrive at a feasible plan for self-sufficiency that can also provide useful generalizable data on the financing of postsecondary open learning.

Task #23: To determine whether the consortium should be expanded beyond the present membership, and if so, how this is to be done.

UMA has begun its existence as a cooperative effort of five state universities in the four states of Nebraska, Iowa, Missouri, and Kansas. It is the hope of UMA that the two state universities of Oklahoma will shortly become associated with UMA, and the question of further expansion has been considered briefly by the Board of Trustees.

By 1980, an analysis of the benefits and disadvantages of alternative expansion plans will have been prepared. From these will flow policy recommendations to the UMA Board concerning expansion, and action will have been taken on these recommendations. Such issues as various kinds of institutional association with UMA, with varying contributions expected and benefits received, extension of membership to other instituions in the UMA states, and obligations of membership, all need to be included in these policy recommendations and actions by the Board of Trustees. The question of the relationship of UMA to public and private postsecondary institutions in the region is an especially sensitive issue that requires study and resolution.

This task is clearly related to the question of the economic viability of UMA and the role UMA will play as a national model for other regional open learning systems.

> Task #24: To determine how courseware developed by UMA can most effectively be exported, both within the UMA region and to delivery systems and institutions outside the region.

The production of high quality multimedia open learning courseware is expensive. As has been mentioned earlier, an important part of the economic planning to date assumes that UMA courses can be copyrighted and leased to other agencies for their use, with the resultant income retained by UMA. Initially, SUN has used the Great Plains National Instructional Television Library as its "publisher" and distributor for open learning courseware. The success of Great Plains and its expertise in marketing and distribution will be invaluable in assisting UMA to insure that its courseware is made widely available.

However, UMA must, by 1980, have devised and tested several approaches to exporting courseware. The following are representative of the kinds of questions that must be answered in the course of this investigation: How can input for course selection and design be structured so as to insure broad acceptance of UMA courses? How much training in the use of UMA courseware is necessary for its successful use elsewhere? Is distribution best handled through academic channels or through Great Plains?

The result of this assignment will be guidelines for effedtive and wide distribution of courses to delivery systems.

Task #25: To determine what social change is brought about by UMA and its associated delivery systems.

We have asserted that UMA intends by 1980 to have moved well along toward an understanding of how the educational franchise can best be extended to adults who cannot, or are reluctant to, participate in traditional postsecondary institutions. Further, we have noted that this educational franchise has generally been seen as important in that it assists individuals to lead fuller and richer lives, it helps insure the functioning of a responsible democratic society, and it contributes heavily to the economic well-being of individuals and society. UMA clearly, then, has a responsibility to examine the impact that it and its associated delivery systems are having on learners, on communities, and on states--in terms of changes in awareness, and in terms of economic and political changes.

The documentation of social change is a difficult task, and one that will have to continue long after this five-year priod. A variety of indicators will have to be developed, survey instruments will have to be constructed, and data will have to be collected to address this important task. The procedures for this work will have to be sensitive also to the possibility of unanticipated social changes, either positive or negative, which will have to be identified and explored.

The results of these investigations, which will obviously have to be undertaken with the close cooperation of the state delivery systems, will be important not only for the addition to knowledge they will represent but also for their utility to UMA policy-makers for future planning efforts.

Task #26: To determine the impact of UMA and its associated delivery system on existing postsecondary institutions.

This task is really a part of the previous task and could have been subsumed under it. However, given that this regional open learning system is a part of the region's postsecondary education system, it seems important to analyze its impact on colleges and universities, on public and proprietary schools, and on other adult education programs in the region. This task is clearly a long-range one and will not be completed by 1980. But it must be begun during the next five years.

Since UMA and its delivery systems are committed to providing to learners educational opportunities locally available, in cooperation with other institutions, the question of impact raised in this task is an important one. For instance, can such cooperation be maintained if other institutions feel threatened by UMA's existence?

In addition, although effecting changes in traditional institutions is not one of UMA's primary goals, it seems important to know whether the open learning system does indeed encourage more openness of curriculum, of requirements, and of delivery modes in traditional institutions. The results of this investigation may have direct implications for policy changes within UMA, as well as being of more general interest in helping to determine whether the creation of parallel structures of open learning does bring about changes in other educational programs.

Task #27: To disseminate information about the model regional open learning system.

As has been noted, UMA and its associated delivery systems are in the process of developing a full-scale operational investigation of the issues related to their conception of their open learning mission. The results of this investigation, if they are to serve usefully in assisting other states and regions by providing generalizable knowledge, must be widely available.

An important goal of UMA is the widespread dissemination of information about the whole concept of open learning. Efforts will be made to bring to the attention of the general public, as well as to traditional educational institutions, the merits of participation in open learning. Data about the type of courses available and their usefulness to the public will be distributed throughout the country. Visitors who wish to examine the operation of UMA will be encouraged and provided ample opportunity to do so. In short, UMA will be a major vehicle in educating the public about the advantages of open learning.

UMA will also be involved in investigating various alternatives for adult learning. In this regard, UMA will undertake to catalogue and evaluate open learning courseware and programs existing in other parts of the world so that anyone wishing to investigate adult postsecondary open learning will be able to look to UMA as a source of guidance and information. Therefore, UMA will undertake not only the development and distribution of curricula for open learning, but also the establishment of a depository of information about adult education and open learning in general and the knowledge gained through UMA's operational investigation in particular.

The Office of Public Affairs and Information Services will have the prime responsibility for preparing and distributing information about various aspects of the project and reports of investigations generated by UMA staff or the delivery systems. In addition, that office will be the major contact for visitors who wish to examine the operation and learn from it. It is intended that full records of activities, accomplishments, problems, and data gathered will be maintained and made available to interested persons.

In addition, professional staff will be active in presenting results of investigations at professional meetings and in publishing such results in professional journals. An annual international open learning conference will be sponsored by UMA. In these ways, the knowledge gained through operation of a model regional open learning system will become widely available for use throughout the country to those interested in postsecondary open learning.

A program of internships will be developed so that UMA can assist in the training of persons in an actual postsecondary open learning system. In this way, UMA will not only provide additional dissemination about its own activities but will also advance understanding of open learning generally.

Finally, if UMA is to be a successful experiment, information about its programs and services must be communicated effectively to prospective learners. Investigations of the use of various media, local gathering places such as supermarkets and shopping centers, and the information networks that exist in urban ghettos are examples of the explorations that UMA will undertake to determine effective ways of reaching target audiences.

APPENDIX V

UMA COURSE DEVELOPMENT PROCESS

COURSE DEVELOPMENT PROCEDURES FOR THE UNIVERSITY OF MID-AMERICA

COURSE DEVELOPMENT PROCEDURES FOR UMA

The course development process employed by UMA/SUN has been developed and refined throughout SUN's 3½-year history. The steps followed are subject to constant revision as experience dictates, and may be subject to some modification in practice. The procedures currently in use consist of 30 steps in 10 overall stages:

> Stage I: Establish Frame of Reference. During this first stage of course development, the general parameters of and assumptions about the course are established. First, the expectations of the various audiences of the course are assessed: not only the intended learners, but also the academic community, the community at large, and various external interests, such as funding agencies. The prime audience is, of course, the intended target population; but during this stage it is crucial to be aware of any constraints imposed by the priorities of external fundors, or by particular needs of other communities. During this stage, it is also necessary to initially specify the content of the course to meet academic requirements, and to set tentative timelines for the development of the course.
>
> Stage II: Plan Course: During this stage, a list of goals for the course as a whole is drawn up, and the learner's options for alternative tracks through the course are described. These plans are reviewed and approved by the Senior Content Advisory Panel before the development of the course continues. Since this point in development provides an operating game plan for the rest of the course, all involved must be satisfied that the direction planned will result in a viable instructional experience, both for the learner and for UMA.
>
> Stage III: Plan Lessons: A detailed outline of specific topics and units (lessons) within the course is prepared, including a statement of instructional tasks or objectives for each lesson and a bank of test items or evaluation situations keyed to each objective or instructional task. Based upon this outline, a working plan for the treatment of materials within each lesson is formulated, and the various media components of the lesson are assigned and put in sequence. At this point, a decision is made as to what material will be acquired from other sources and adapted as necessary, and what material will be locally produced.

Stage IV: Revise Course Development Plan: During this stage, it is determined what production personnel will be needed for the course and recruitment begins; and the final timelines for production, evaluation and first offering of the course are set.

Stage V: Lesson Production: During this stage, final approval is given to the content and instructional design of all individual lessons, and the media components are produced.

Stage VI: Lesson Review: The lesson is reviewed by the Senior Content Advisory Panel, and either approved or returned for necessary revision. Once all lessons are approved, the course is submitted to academic departments of the UMA institutions for approval for credit.

Stage VII: First Field Test: The course is delivered to learners, with careful assessment procedures by Research and Evaluation personnel to provide data for revision.

Stage VIII: Second Field Test: A second offering of the course, which results in specific suggestions for revision.

Stage IX: Course Revision: Based on the outcomes of the two field tests, the course is revised into final form. It is assumed that after the first revision, the normal course life will be three to five years without a formal structure for periodic revision.

Stage X: Full Course Implementation: At this point, the now-completed course is released to all UMA delivery systems, and made available for lease to other delivery systems through Great Plains National Instructional Television Library.

STAGE I: ESTABLISH FRAME OF REFERENCE

OUTCOME: Written Description of the Intended Target Population

This outcome should include:

1. Description of the characteristics of the known or assumed audience.

2. General nature of this audience as adult learners.

3. Student expectations from the material associated with the course.

4. Learner characteristics which will affect content, design, and production.

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer Research/Evaluation
Assisted by:	Resident Content Consultant Adult Education Experts
Advised by:	UMA Academic Council
With involvement of:	Executive Producer

This outcome is critical to course development because:

The development of a course must proceed from the basis of known or assumed audience characteristics and their expectations of the course.

The selection of content, planning of instructional strategies, and communicating material through the media may vary significantly for one audience than for another.

Where it is not possible for the target audience to be known before development of the course, establishing what the audience is assumed to be will result in a more clearly focused effort.

STAGE I: ESTABLISH FRAME OF REFERENCE

OUTCOME: Listing of known Community and Professional Expectations

This outcome should include:

1. Consideration of the standards or criteria the community or the profession (where applicable) will use to assess the success of instruction.

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer Research/Evaluation
Assisted by:	Senior Content Advisory Panel Resident Content Consultant
Advised by:	Members of the community Representatives of the associated profession
With involvement of:	Executive Producer

This outcome is critical to course development because:

When the course is to be assessed by members of the community, or by the profession associated with the field, it is essential to know what they expect the course to do.

Specific elements of the course, related to known community or professional expectations, may have to be added to the course structure to satisfy the needs of this secondary target population.

STAGE I: ESTABLISH FRAME OF REFERENCE

OUTCOME: Clarification of Restraints Imposed by Funder's Goals and Priorities

This outcome should include:

1. Specification or clarification of what restraints are imposed and what latitudes of freedom are allowed.

2. Specification of outcomes that are desired by the Funding agency as a result of the instruction developed.

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer Associate Provost, Course Development
Assisted by:	
Advised by:	Funding Agency Representative Provost
With involvement of:	Executive Producer Research/Evaluation Production Services

This outcome is critical to course development because:

A balance must be struck between the ideal and the real; what is desired to be done and what can be done in the course.

Without acknowledging that there may be restraints imposed on the course by the specific terms of the grant which funds its development, specific contractual agreements may not be satisfied.

There are, at the same time, degrees of freedom allowed by funding agencies which will also directly affect content selection, instructional strategies, and communication techniques in production.

Ignoring this factor in course development may jeopardize future funding by this agency.

Specifying Funders goals and priorities may also provide the base from which the staff and team members can jointly work to reeducate the funding agency where restraints need to be loosened or where greater specificity of expectations may be desired.

STAGE I: ESTABLISH FRAME OF REFERENCE

OUTCOME: Specifications of Content to Meet Academic Requirements

This outcome should include:

1. A listing of the requirements expected in order to grant credit or certification both in terms of cognitive skills and attitudinal patterns.

Responsibilities for outcome:

Prime Responsibility: Resident Content Consultant
Instructional Developer

Assisted by: Subject Matter Consultants

Advised by: Senior Content Advisory Panel
UNL Academic Department

With involvement of: Executive Producer
UMA Academic Council

This outcome is critical to course development because:

If the material will be offered as a credit course, there are content elements which are expected to be included as a part of the learner's experience. These must be known and included in the course.

The selection of course content from the body of knowledge in the field is a negotiated process between the instructional developer and the resident content consultant. In these negotiations, factors of learner expectations, community preferences, funders biases and academic requirements must be considered.

STAGE I: ESTABLISH FRAME OF REFERENCE

OUTCOME: Tentative Timelines for Development of Course

This outcome should include the following estimates:

1. Time needed for total development
2. Media components contemplated
3. Personnel requirements
4. Preliminary budget
5. Graphic display of critical design, production and evaluation points to communicate tasks and roles to the team members.

Responsibilities for outcome:

Prime Responsibility:	Instructional Systems Analyst Instructional Developer
Assisted by:	Production Services Research/Evaluation
Advised by:	Associate Provost Delivery System
With involvement of:	

This outcome is critical to course development because:

The tentative time lines are determined at this point to estimate when the course might be offered to learners.

It also helps consolidate planning to this point, provides an early estimate from which to project future activities, and provides a preliminary budget from which to work through Stage IV.

It is important also that each team member see his contribution in relation to the total structure of the development of the course.

Remarks:

The Senior Content Advisory Panel is convened during Stage I. Their input and review must be completed before this point in the process.

STAGE II: PLAN COURSE

OUTCOME: List of goals for entire course

This outcome should include the following:

1. Selection of thse goals which are evident in the academic requirements, learner expectations, community priorities and professional standards which can be met by UMA's commitment to mediated instruction.

2. Consideration of alternative curricular conceptions, teaching-learning paradigms, and theories of instruction which might have impact on the formulation of goals.

Responsibilities for outcome:

Prime Responsibility: Resident Content Consultant
Instructional Developer

Assisted by: Executive Producer

Advised by: Research/Evaluation
Senior Content Advisory Panel

With involvement of: UMA Academic Council

This outcome is critical to course development because:

The goals provide direction for all other activities in course development. Without a clear statement of content goals, learner goals, and process goals there will be little direction or specific purpose of design.

The statement of goals also distinguish the possible from the impossible. It establishes the functional base from which to proceed with course development.

STAGE II: PLAN COURSE

OUTCOME: Description of options for learner's progress through material

This outcome should include the following:

1. Indications of different starting points in the material, depending on student entry level.

2. Indications of different content options (modules), through remedial tracks, core tracks, and specialized tracks

3. Consideration of alternative curricular conceptions, teaching-learning paradigms, and theories of instruction which might impact on content options.

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer
Assisted by:	Resident Content Consultant
Advised by:	Research/Evaluation Executive Producer
With involvement of:	Senior Content Advisory Panel

This outcome is critical to course development because:

"Open Learning" courseware must offer options to the learner in different ways he can access the material of a course. By providing for learner options through the body of material, the course can provide alternative learning paths based on both learner entry level and on learner expectations.

Single track courses, offering the learner no options, cannot meet pluralistic course goals with any accepted degree of learner or instructional efficiency.

STAGE II: PLAN COURSE

OUTCOME: Approved Goals and Content Options

This outcome should include the following:

1. Final determination of the scope of material to be included, and ways the learner can deal with content options.

Responsibilities for outcome:

Prime Responsibility: Senior Content Advisory Panel

Assisted by: Associate Provost - Course Development

Advised by: Instructional Developer
Resident Content Consultant

With involvement of: Executive Producer
Research/Evaluation

This outcome is critical to course development because:

Approval must be given to the overall course outline, which may graphically show the interrelationship of parts to the whole, before the development on the course can continue.

Since this point in development provides an operating game plan for the rest of the course, all of those involved with and responsible for the course to this point must be satisfied that the direction planned will result in a viable instructional experience -- both for the learner and for UMA.

Remarks:

This marks the last meeting in which the Senior Content Advisory Panel convenes to approve plans before they are asked to sanction the course after it is produced.

STAGE III: PLAN LESSONS

OUTCOME: Detailed Outline of Specific Topics and Units (Lessons) within course

This outcome should include the following:

1. Reflection of the practical limitations and capabilities of the context in which the course will be developed and delivered.

2. Preliminary consideration of media options which may be exercised.

3. Specification of the content of each topic, unit or lesson.

Responsibilities for Outcome:

Prime Responsibility: Resident Content Consultant

Assisted by: Instructional Developer

Advised by:

With involvement of: Research/Evaluation

This outcome is critical to course development because:

It is at this point in course development that you begin to specify what portions of content will be dealt with in discrete segments called units topics or lessons.

It is also here that the number of each type of course component will be first estimated.

PHASE III: PLAN LESSONS

OUTCOME: Statement of instructional tasks or objectives for each lesson

This outcome should include the following:

1. Statement of what the learner should know, feel or do after each lesson.

2. Statement of the content material that will cause the learner to know, feel, or do as anticipated.

3. Description of how material should be treated in production to allow the learner to interact in a way that can be directly or indirectly evaluated.

4. Indications of which instructional tasks or objectives cannot or should not be measured.

Responsibilities for outcome:

Prime responsibility: Instructional Developer

Assisted by: Resident Content Consultant
Test and Measurement Specialist

Advised by: Executive Producer
Research/Evaluation

With involvement of:

This outcome is critical to course development because:

The basis for the specific production and measurement of effectiveness is the statement of instructional task or objective. Without this being made clear, there would no way of assuring the appropriate content material was treated in an appropriate manner; nor would there be any way of assuring that outcomes of the course measured were indeed the outcomes sought after.

STAGE III: PLAN LESSONS

OUTCOME: Bank of test items or evaluation situations keyed to each objective or instructional task.

This outcome should include the following:

1. A sufficient number of items or situations which will provide the material for instructional testing, field testing, and end-of-course examinations

Responsibilities for Outcome:

Prime Responsibility:	Test and Measurement Specialist
Assisted by:	Resident Content Consultant Instructional Developer
Advised by:	Research/Evaluation
With involvement of:	

This outcome is critical to course development because:

A bank of appropriately designed test items, keyed to specific instructional tasks or objectives, can be used throughout the further development of the course for various purposes. Items from the item bank can be drawn out for instructional testing in the actual lessons themselves; items can be drawn for assessing specific cognitive gains in field testing; and items can be used for different forms of the end-of-course examination in order to grant college credit.

Remarks:

It is at this point also, that the total evaluation plan and preliminary work on attitudinal measures can begin.

STAGE III: PLAN LESSONS

OUTCOME: Working Plan for the Treatment of Material within each Lesson

This outcome should include the following:

1. Selection and sequence of content material for each objective

2. Selection of the mode of study for the material for each objective or instructional task (e.g., didactic, dramatic, inquiry, etc.)

3. Selection of the instructional strategy, or the means by which the material is to be presented.

Responsibilities for outcome:

Prime Responsibility:	Resident Content Consultant Instructional Developer
Assisted by:	Executive Producer
Advised by:	Research/Evaluation
With involvement of:	

This outcome is critical to course development because:

Even in an unstructured approach to instruction, content material must be organized in some fashion before it is presented to the learner to interact with.

This step in design results in a more efficient and effective way to attempt to achieve desired outcomes.

STAGE III: PLAN LESSONS

OUTCOME: Format of Treatment for Each Component

This outcome should include the following:

1. Clear description of how instruction will be treated in each medium (e.g., dramatic, audio-tutoral, documentary, etc.).

2. Indication of the kind of media writers and producers needed.

Responsibilities for Outcome:

Prime Responsibility:	Instructional Developer Executive Producer
Assisted by:	Resident Content Consultant
Advised by:	Production Services Research/Evaluation
With involvement of:	

This outcome is critical to course development because:

The format of the treatment of material in each medium used as a lesson component is going to be critical in knowing who to hire to write and produce instruction.

Continuity of format, (or deliberate lack of it for valid reasons) between all course components will result in a more unified package that the learner will be given.

STAGE III: PLAN LESSONS

OUTCOME: Sequence of components within each lesson

This outcome should include the following:

1. Statement of recommended order in which learner should study the content material from each media component.
2. Statement of rationale for the order recommended.
3. Consideration of the unified treatment of total content in each lesson

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer
Assisted by:	Resident Content Consultant Executive Producer
Advised by:	Research/Evaluation
With involvement of:	Delivery System

This outcome is critical to course development because:

The treatment of the content in each medium may well depend on when, in relationship to other media, the learner will use it.

If this relationship between lesson components is not clear to the course development team in design, it cannot be clear to the learner in use. Without this outcome as a result of design, a disorganized pattern of instruction might well result.

STAGE III: PLAN LESSONS

OUTCOME: Decision on What Material wi 1 be Sought from Other Sources

This outcome should include the following:

1. Evaluation of existing material according to development/design criteria, availability, budget, copyright, etc.

Responsibilities for outcome:

Prime Responsibility: Executive Producer

Assisted by: Instructional Developer
Resident Content Consultant
Course Acquisition Specialist

Advised by:

With involvement of:

This outcome is critical to course development becuase:

It cannot be assumed that a locally-produced UMA course will contain only material produced here. Indeed, economies as well as qual ty can be effected by actively seeking out material produced elsewhere that conforms to the course design and is available for use.

This critical outcome pertains not only to television components,but to print and audio components as well.

STAGE III: PLAN LESSONS

OUTCOME: Indication of what material will be treated in local production

This outcome should include the following:

1. consideration of capacity to handle local production.
2. Inventory of available media for this course
3. Consideration of audience preferences for each medium
4. consideration of audience access to each medium.
5. Specific assignment of parts of the material for each lesson to each or several of the media available

Responsibilities for outcome:

Prime Responsibility:	Executive Producer Instructional Developer
Assisted by:	Resident Content Consultant
Advised by:	Production Services
With involvement of:	

This outcome is critical to course development because:

At this point in the process it is known exactly how much will be involved in local production for television, audio, print, plato, etc.

This point in design also helps to define future facilities and personnel needs and will contribute to more accurate budgeting. If these decisions are not made, there could be oversheduling or underuse of facilities and human resources.

STAGE IV: REVISE COURSE DEVELOPMENT PLAN

OUTCOME: Description of the personnel required for the production of lessons

This outcome should include the following:

1. Consideration of recruitment limitations and present staff availabilities.

2. Selection of the television writer and producer with the competencies and experience to treat the material as desired in the lesson.

3. Selection of audio writer and producer with the competencies. and experience to treat the material as desired in the lesson.

4. Selection of print writer and producer with the competencies and experience to treat the material as desired in the lesson.

5. Assignment of CAI/CMI specialist to course and selection of a PLATO programmer with the competencies to treat material as desired.

Responsibilities for outcome:

Prime Responsibility:	Executive Producer Instructional Developer
Assisted by:	Production Services Associate Provost - Course Development Business and Finance
Advised by:	Content Consultant
With involvement of:	Instructional Systems Analyst

This outcome is critical to course development becuase:

At this point the writers and producers for each medium to be used are brought onboard the team. By waiting until now to make the selection of these staff members, specific talents can be brought to bear on the course, and writers will not be asked to produce in a format foreign or uncomfortable to them.

STAGE IV: REVISE COURSE DEVELOPMENT PLAN

OUTCOME: Final timeline for production, evaluation and first offering of course.

This outcome should include the following:

1. Decision on which and how many lessons will be developed according to each of the five development types.

2. Refigure budget on the basis of the number of lessons in each of the five development types.

3. Estimate when first offering of the course to students will be possible.

Responsibilities for outcome:

Prime Responsibility:	Instructional Systems Analyst
Assisted by:	Executive Producer Instructional Developer Production Services
Advised by:	Delivery System Associate Provost
With involvement of:	

This outcome is critical to course development because:

The production schedules for each medium can be more realistically set when it is known exactly what must be done and how it is to be done.

There should be the option to select certain of the lessons for a high-budget development (referred to as a course development type in the past) and which lessons can be produced with a low-budget development type.

Initial estimates of offering the course now will allow adequate preparations to be made by the Delivery System and by Promotion and Publicity.

STAGE V: LESSON PRODUCTION

OUTCOME: All arrangements made for local production of each component used in course

This outcome should include the following:

1. Pre-production arrangements made
2. Production arrangements made
3. Post-production arrangements made
4. Additional personnel needs for Production Services identified

Responsibilities for outcome:

Prime responsibility:	Production Services
Assisted by:	Executive Producer Individual media producers
Advised by:	Instructional Development
With involvement of:	Production Facility Associate Provost - Course Development

This outcome is critical to course development because:

This is a gross and general description of the arrangements for and scheduling of all people and facilities from pre-production through post production for each of the media components used.

Without these arrangements, delays in course production may be forced because of lack of personnel, or inability to get to technical facilities when desired.

STAGE V: LESSON PRODUCTION

OUTCOME: Content and Design Approval of all lesson components

This outcome should include the following:

1. Approval of content accuracy and integrity in the treatment given within each medium.

2. Approval of design integrity and androgogy (pedogogy) in the treatment given within each medium.

Responsibilities for outcome:

Prime responsbility:	Resident Content Consultant Instructional Developer
Assisted by:	
Advised by:	Senior Content Advisory Panel
With involvement of:	Media producers Media writers

This outcome is critical to course development because:

Both the integrity of content and the fidelity to design must be appruved before any lesson component is offered to the student.

However, criteria for approval by both content and design must be made known to proeuction before hand, and criticisims and suggestions made according to the pre-agreed upon criteria.

STAGE V: LESSON PRODUCTION

OUTCOME: Completed Television Component for each Lesson

This outcome should include the following:

1. Script specifications for treatment of material by television.

2. Selection of test items or evaluation situations to be used in television as instructional testing.

3. Written and approved script for each television component.

4. Existing material from other sources acquired, where appropriate.

5. All arrangements for local production completed. (e.g., audition and hire talent, design and construct sets, order and execute television graphic art, schedule studios, etc.)

6. Locally produced material on tape

7. Master video tape of edited television component.

Responsibilities for outcome:

Prime responsibility: Television Producer

Assisted by:
Television Writer
Test/Measurement Specialist
Production Services
Production Facility

Advised by:
Executive Producer
Instructional Developer
Resident Content Consultant

With involvement of:

This outcome is critical to course development because:

The television component (where appropriate) for each lesson must be completed before the total lesson package can be reviewed and tested.

STAGE V: LESSON PRODUCTION

OUTCOME: Completed Audio Component for Each Lesson

This outcome should include the following:

1. Script specifications for treatment of material by audio

2. Selection of test items or evaluation situations to be used as instructional testing in the audio component.

3. Written and approved script for each audio component.

4. Existing materials from other sources acquired.

5. All arrangements for local production completed (e.g., audition and hire talent, schedule studios, etc.)

6. Locally produced material on tape

7. Master tape of edited audio component

Responsibilities for outcome:

Prime responsibility:	Audio Producer
Assisted by:	Audio writer Test/Measurement Specialist Production Services Production Facility
Advised by:	Executive Producer Instructional Developer Resident Content Consultant
With involvement of:	

This outcome is critical to course development because:

the audio component for each lesson (where appropriate) must be completed before the total lesson package can be reviewed and tested.

STAGE V: LESSON PRODUCTION

OUTCOME: Completed Print compontents for each lesson

This outcome should include the following:

1. Copy specifications for treatment of material in print.
2. Selection of which print components will be used
3. Selection of test items or evaluation situations to be used in the print material as instructional testing.
4. Written and approved manuscript copy for each print component.
5. Edited manuscript sent for typesetting
6. Edited galleys sent to printer
7. Pages pasted up
8. Page proofs of completed print components.

Responsibilities for outcome:

Prime Responsibility:	Print Producer
Assisted by:	Print Writer Test/Measurement Specialist Production Services Print Shop Production facility for print art
Advised by:	Executive Producer Instructional Developer Resident Content Consultant
With involvement of:	

This outcome is critical to course development because:

The print components for each lesson (where appropriate) must be completed before the total lesson package can be reviewed and tested.

STAGE V: LESSON PRODUCTION

OUTCOME: Completed PLATO component for each lesson

This outcome should include the following:

1. Selection and adaptation of test items or evaluation situations to be used for instructional testing on PLATO.
2. Written and approved material for each PLATO component.
3. Material written in TUTOR language
4. Material programmed on PLATO

Responsibilities for outcome:

Prime Responsibility: CAI/CMI Specialist

Assisted by: PLATO Programmer
Test/Measurement Specialist

Advised by: Executive Producer
Instructional Designer
Resident Content Consultant

With involvement of:

This outcome is critical to course development because:

The PLATO components for each lesson (where appropriate) must be completed before the total lesson package can be reviewed and tested.

STAGE V: LESSON PRODUCTION

OUTCOME: Completed components using other media or experiences for each lesson

This outcome should include:

1. Specifications for learning experiences to be under the learner's control.

2. Specification of instructional activities which should be under the direction of each Learning Center.

3. Specification of other lesson material that must be purchased by or for the learner (e.g., laboratory apparatus, special tools or equipment, readings, etc.)

Responsibilities for outcome:

Prime Responsibility:	Instructional Developer
Assisted by:	Resident Content Consultant Executive Producer
Advised by:	Delivery System Production Services
With involvement of:	Research/Evaluation

This outcome is critical to course development because:

This outcome of the course development process accommodates potential instructional sources not directly included in the course package. It also serves as a way to handle the "nice to know" as well as the "need to know."

It is also at this point in development that experiences in which the student is expected (or encouraged) to take an active part, but which cannot be mediated by conventional means is structured and coordinated through learning center personnel.

STAGE VI: LESSON REVIEW

OUTCOME: Approval and endorsement of finished lesson components

This outcome should include the following:

1. Specific suggestions for revision, if necessary, by the Professional Review Panel (which may include students)

2. Specific suggestions for revision, if necessary, by the Senior Content Advisory Panel

3. Effectiveness and appeal aspects of each lesson component identified for evaluation in field testing.

4. Delivery system notified of total course structure

5. Faculty selected for delivery.

Responsibilities for outcome:

Prime Responsibility:	Professional Review Panel Senior Content Advisory Panel
Assisted by:	Executive Producer Resident Content Consultant Instructional Developer
Advised by:	Delivery System Research/Evaluation
With involvement of:	Individual media writers and producers Instructional Systems Analyst

This outcome is critical to course development because:

Approval and endorsement of the total package of lesson components is required before the course can be offered to students.

It is also at this point in design that academic acceptance of the course for credit through the appropriate UNL (or UMA institution) department is obtained.

STAGE VII: FIRST FIELD TEST

OUTCOME: Results from actual enrolled students on the appeal and effectiveness of instruction and the workability of the delivery system.

This outcome should include the following:

1. Duplicate copies of all course components ordered
2. Course components distributed to enrolled students
3. Profile of student actually enrolled
4. Results of appeal and effectiveness of instruction and delivery system.
5. Tentative listing of areas which might need revision.
6. Listing of areas needing specific additional evaluation in second field test.

Responsibilities for Outcome:

Prime Responsibilities:	Delivery System Research/Evaluation
Assisted by:	Instructional Developer Production Services GPN
Advised by:	Associate Provost - Course Development UMA Academic Council UNL academic Department
With involvement of:	Learning Center Personnel Resident Content Consultant

This outcome is critical to course development because:

This is the first offering of the course, possibly limited to Nebraska distribution. In assessing the effectiveness and appeal of instruction during actual field use, suggestions for revision will have more validity.

STAGE VIII: SECOND FIELD TEST

OUTCOME: Specific suggestions for course revision

This outcome should include the following:

1. Verification of first field test results

2. Listing of things in each course component needing revision

3. Results of testing and evaluation of additional concerns and concepts not covered in first field test.

Responsibilities for outcome:

Prime Responsibility:	Delivery System Research/Evaluation
Assisted by:	Instructional Developer Production services GPN
Advised by:	Associate Provost, Course Development UMA Academic Council UNL Academic Department
With involvement of:	Learning Center Personnel Executive Producer Resident Content Consultant

This outcome is critical to course development because:

This is the second offering of the course. Possibly at this time it can be offered beyond Nebraska to include the total UMA region.

It is at this point in the development of the course that specific suggestions for revision are formulated.

STAGE IX: COURSE REVISION

OUTCOME: Validated course for SUN, UMA and National distribution

This outcome should include the following:

1. Complete plan for what must be revised in the course
2. Timelines and approved budget for course revision
3. Personnel selected for revision
4. Revision of all necessary course material

Responsibilities for outcome:

Prime Responsibility:	Associate Provost, Course Development Instructional Systems Analyst Instructional Developer
Assisted by:	Executive Producer Business and Finance Production Services
Advised by:	Senior Content Advisory Panel
With involvement of:	Appropriate media producers, writers and support staff in the lesson components which require revision.

This outcome is critical to course developement because:

It is at this point that the course is "formally adopted" into the UMA curriculum.

Specific areas for revision will be budgeted for according to the needs of each individual course.

It is assumed that after the first revision, the normal course life is three to five years without a formal structure for periodic revision.

STAGE X: FULL COURSE IMPLEMENTATION

OUTCOME: Enough income is generated by lease of course to develop another course

This outcome should include the following:

1. Assignment of income to future course development
2. Course is actively sold by GPN

Responsibilities for outcome:

Prime Responsibility: UMA Academic Council
Great Plains National

Assisted by: State Delivery Systems

Advised by:

With involvement of:

APPENDIX VI A

DEVELOPING STUDENT ACHIEVEMENT MEASURES

TABLE OF CONTENTS

Page

SOME EXPERIMENTS IN ITEM DEVELOPMENT

Accounting I - A First Experiment 1
Accounting I - A Second Approach 4
Accounting I - A Third Approach 8
Introductory Psychology - Item Development 10

CONSTRUCTING ITEMS INTO TESTS

Accounting I 15
Introductory Psychology 17

AN ANALYSIS OF THE INITIAL TEST RESULTS

Accounting I 19
Introductory Psychology 23
THOUGHTS ON THE VALIDITY OF UMA/SUN's TESTS 25
THOUGHTS FOR THE FUTURE 29

DEVELOPING STUDENT ACHIEVEMENT MEASURES

This is a report on the student assessment procedures utilized by UMA/SUN for its first two courses, Introductory Psychology and Accounting I. Included are descriptions of various experiments in producing test items, a report on the construction of tests from the items, and a presentation of the results of the first tests in terms of learner achievement and item statistics.

Some Experiments in Item Development

Accounting I - A First Experiment

During the week of May 6-10, 1974, a gfoup of four people, consisting of three advanced doctoral students and one Assistant Professor, was gathered together for the purpose of developing achievement test items for the Accounting I course. This section describes the procedures of this experiment and comments upon the results obtained.

The Task. Participants at this first item writing session were to develop achievement test items for the Introduction and Unit A of the Accounting course. The Accounting course had been divided into units which are further divided into concepts. The Introduction contained six concepts and Unit A contained 22 concepts for a total of 28 concepts. Item writers were asked to study text chapters, the study guide and concept sheets in an effort to develop achievement measures.

The primary source for achievement development was the concept sheet. These sheets state an instructional task, prerequisite knowledge needed by the learner to approach that task, and the content to be covered in a given concept. From those sheets, item writers were to construct achievement measures appropriate to that concept. The other materials mentioned, particularly the text book, were to be used as a reference.

It was hoped at least two drafts of each item would be developed during the week. These items would be finally reviewed for approval by the resident content specialist.

The Process. Item writers were first given an orientation to UMA/SUN. This orientation included special emphasis on the design and development of the Accounting course. Both the instructional designer and the resident content specialist associated with the Accounting course were present and offered their perceptions of the course as it now stands.

Each item writer was then assigned a total of seven concepts to deal with during the week. Each was given copies of the text chapter and the concept sheets and was to approach his task in any way he thought desirable.

Upon completing first draft items, each writer gave those items to an Accounting consultant, who was brought to Lincoln during the week to work with the item writers. That Accounting consultant reviewed each item, commented upon them and returned the items to the writers. The writers then revised the items according to comments from the content consultant. After the items had been revised, they were typed on index cards with one item per card. The cards were given to the resident content specialist for his review. Upon his recommendations, some items were rejected, others were recommended for revision and still others were accepted as is.

In all, 323 items were developed during the week. Upon review by the resident content specialist, 35 items were recommended for rejection, 267 items were recommended to stay as is, 21 items were recommended for minor revision.

Comments on the Process. The units under consideration in this first exercise were the beginning units of the Accounting course. Therefore, the content developed in those units was at a reasonably low level of complexity.

This factor is important in reviewing the results of the item writing exercise. Both Accounting specialists commented that the item writers had done a good job through approximately Concept 17 in Unit A. From that point on, the content became more complex thus making it more difficult for non-content specialists to develop items. It appeared we would probably need to bring in Accounting specialists for the next round of item writing, and either give them the assistance of a measurement specialist, or have them work as a team with a measurement specialist. This, it was felt, might insure a better reflection of content depth than could be obtained from non-content specialists.

The items that emerged during the first round of item writing were, by and large, quite acceptable. The content specialist felt the items did capture the essence of the content being taught in the first units. However, as stated above, both content people remarked it would be increasingly difficult for a non-content specialist to grasp the subtle nuances of content that would be evident throughout the remainder of the course.

The total cost for the week of item writing amounted to approximately $2,600.00, or about $10.00 for each item acceptable as is. Given the number of items that were created and the quality of those items, we think it can be said that the experiment was successful.

Accounting I - A Second Approach

Following the conclusion and overall appraisal of UMA/SUN's initial effort at pinpointing effective means for developing course achievement measures, a second approach was planned and implemented.

A team of three persons experienced in Accounting, including one Assistant Professor and two advanced doctoral students, were assembled during the week of June 3-7, 1974. In addition, an Assistant Professor specializing in testing and measurement was brought in as a part of the team for the first two days. This team was charged, as was the first team, with the development of achievement test items for a stipulated portion of the Accounting I Course.

The Task. The team members in this second achievement measure development experiment were enlisted to develop appropriate test items for Units B through D of the Accounting I course. These three units, encompassing the material included in six chapters of the text (two chapters per unit), included 37 concepts. The team members were provided with concept sheets and text chapters for the units assigned. In addition, they had access to all the course materials used by the first team and to the items developed by it.

The team was informed that it was anticipated that more than one item would be developed for each concept; that all concepts would have items developed relative to them; and that each item developed would go through at least two drafts during the week, after which the resident content specialist would review the items for final approval.

The Process. As with the first team, a rather thorough orientation to UMA/SUN and to the Accounting course was the initial undertaking with this second team. It was originally planned that the following procedures were to be followed by the team. Each of the three accounting specialists was assigned one unit arbitrarily for item development. As items were written, they were to be reviewed by the measurement specialist during the first two days in order to ensure compliance with correct item writing standards. It was assumed this step would be a necessary provision only during the initial stage of the team's work. The items, when approved by the measurement specialist, were then to undergo initial review by the resident content specialist, to insure adequacy of the specific content of each item. When a team member completed writing items for all the concepts in the unit, a second team member, again assigned arbitrarily, was to go back over that unit and develop items considered necessary for adequate coverage of the concepts. This 'two vantage points' approach would provide, it was felt, sufficient items for each concept.

The unexpected illness of the resident content specialist necessitated a significant change in the planned procedures for the team. It was decided the team as a whole would serve as the "reviewing content specialist." Each team member write the items for his assigned unit as planned, and these items were then reviewed by the measurement specialist during the first two days (and thereafter by the resident Research Associate). When a team member completed the items for his unit, they were turned over to a second team member for review as to the adequacy of content and for the development of additional items if necessary. The team members were located in the same room (being from Lincoln, they had the option of working elsewhere) and they sought to resolve differences regarding item content through open discussion. Following this internal review by the team, the items were typed on individual index cards which were reviewed by the resident content specialist for final approval.

A total of more than 250 items were developed during the week. Of this total, 40-50 were considered to be of too low quality to be useable, and 20-30 were considered to be of useable quality with some modifications. The remaining items were considered to be of high enough quality to be considered for use in the actual test.

Evaluation of the Approach Used and the Process Followed. This second approach to achievement measure development has seemed to provide some definite advantages over the first approach employed. In the first place, the team members were well-acquainted with the content involved and thus did not require the familiarization period needed by the first team. They were experienced in writing test items over the same or, at least, very similar accounting material. Secondly, although the total number of test items generated was less than with the first team, the units covered by the second team were considerably more involved and the items developed were commensurately more detailed and complex. Many of these items were, as before, relatively short objective type items, but even here they were typically of greater complexity than similar items relating to the earlier units. Thirdly, the team members were already well-acquainted with each other, and were able to work together smoothly and efficiently from the beginning.

In the light of the difficulty encountered during the first team writing effort in having measurement specialists who were previously unacquainted with the content develop the items, this approach does seem at first blush to be a more effective one. The only problem encountered was the time the members of the team required at the outset to familiarize themselves with the sequencing of the material, the procedures to be followed in the development of items, and the review of what had been already done by the first team. The team members themselves suggested that, if possible, in the future it would be more efficient to have the same persons develop all the items for the course. It was further suggested, however, that if this is done, the task should be split so such persons spend no more than a week at a time on concentrated item writing. It has become apparent to all involved that the efficiency of writing test items decreased markedly after several full days of continuous writing.

This particular team displayed more item writing sophistication than was originally assumed. As a result, there was some question on the part of team members (including the measurement specialist) as to whether the procedure followed in using the measurement specialist was the most effective one. It was suggested it might be more efficient, at least under these circumstances, to have the measurement specialist review the items toward the end of the item writing period rather than at the beginning. If this were done, it should perhaps be coupled with two other provisions: 1) a resident staff member in the Office of Research and Evaluation should review all items as they are developed in order to pinpoint any general deficiencies; and 2) the item writing team should have selected materials which provide guidelines for correct item writing.

Although the items generated by this team have not yet been subjected to any comprehensive analysis, they appear to be of a reasonably high quality. Moreover, the degree of learning which these items seek to measure seems to be commensurate with the degree of learning sought from the instructional material.

The costs for this second venture in item writing for the Accounting I course were significantly less than in the first experiment because of the reduced travel and per diem costs for the team members. The cost per usable item under these conditions was about $5.00. The same conditions (availability of competent content specialists locally) will not always exist with other UMA/SUN courses but, nonetheless, it appears at this juncture that the quality of items produced, the number of items developed and the costs involved worked together to bring about a successful achievement measurement development venture.

Accounting I - A Third Approach

Having experimented first with a team of measurement specialists working under the guidance of content experts, and then with a team of content experts working under the relatively direct guidance of a measurement person, a third approach to item development was tried. The content experts wrote relatively independently, with their work being checked only by other content experts before being delivered to UMA/SUN's resident content and measurement specialists for consideration for use in the actual test.

The Process. The items which were to be written during this final session were to cover Units E and F of Accounting I, the last two units of the course. The team consisted of the same three persons experienced in accounting as had participated in the second session, plus the resident measurement specialist of the Office of Research and Evaluation. The primary difference in format was that all of the writing was done entirely in the homes or offices of the content persons, with all contact between team members done through the U.S. Mail. As items were written based on the usual concept sheets and textual material, they were forwarded by mail to another team member who reviewed them for content accuracy and sent them to UMA/SUN's measurement specialist. All other details were essentially the same as those used in the second approach.

Evaluation of the Third Approach. The fruits of familiarization with the task, with the content and with the other team members were evident during this third session. The team required little additional direction. They produced slightly more items (about 300) than were produced in the previous session, with about the same proportion of items acceptable as is.

There are some hazards to be avoided in this approach, however, if it is to be adopted. It is important the progress of the writers be monitored, to insure the work is done on time. The writers on this team presented no problem in this regard, but the temptation to delay the work in the informal environment of a writer's home or office is probably a real one.

It is also important the writer's work be monitored for quality and the quantity is specified. Again, this group posed no problems, because they had previous experience with UMA/SUN, and they were well-qualified. However, as new content persons are selected to write items for various courses, it will be necessary to closely monitor the quality of the writing during the early stages of the process, lest we be surprised with unexpected incompetence in the face of a deadline.

The problems with this third approach, then, are problems of communication. If the team is well-qualified, and thoroughly familiarized with UMA/SUN's needs, there should be no problem. If there is uncertainty about the team's qualifications, it is important their work be carefully scruitinized during the early states of item development. In general, the items produced in this session appear to be of higher quality than those from the first session, and as high a quality as those from the second session. It is not possible to give a percentage estimate of numbers of unacceptable items, however, as the decision process consisted of a gradual narrowing down of the item pool by the measurement person and by the resident content specialist, who became more particular at each stage of the selection process, until the final selection of items had been carefully scrutinized by both content and measurement people a number of times. The items were of such quality that the final decisions on item selection were generally between an adequate item and a very adequate item. This was also due to the fact that we have a relatively large item pool from which to choose.

The cost per item was relatively low, about $3.00 per item. This was due to the absence of travel costs, the previous training and experience of the team members, and the fact that the measurement specialist was on staff as opposed to being brought in as a consultant. In the future, for courses which have well-specified content, and for which there is a clear understanding of what is evidence of comprehension of that content, UMA/SUN would do well to follow this model of item development, possibly in conjunction with the second approach as an introduction.

Introductory Psychology - Item Development

During the week of September 9, 1974, a number of persons were brought together to create an item pool to be used for the construction of tests for the Introductory Psychology course. The team consisted of two University of Chicago doctoral students in measurement who were also knowledgeable in psychology, and three University of Nebraska at Lincoln (UNL) graduate psychology students, each of whom had some experience teaching general psychology and/or writing psychology test items. These five students and a University of Nebraska at Omaha (UNO) professor actually wrote the items, while another UNO professor of psychology and UNL professor of psychology participated as reviewers and occasionally as item writers.

The Task. The first morning was spent orienting the team to SUN, the Introductory Psychology course and the task at hand. Some time was also spent in discussing item writing, in terms of examples collected for that purpose.

The writers were presented with concept sheets, representing the terms and phrases thought to be important by the course content specialist, one sheet for each of 15 units. The writers took turns choosing units on which to write items, until there were two persons on each unit. They were instructed to write one item for each concept. Through discussion, they were particularly made aware we wanted a minimum of "fact or definition" items, and to emphasize the higher-order behaviors of analysis, comprehension and synthesis. We requested they write questions requiring the students to extrapolate from the text, and to apply what they learned to new situations. We also gave the item writers a list of objectives showing that the student was held responsible for defining terms, for relating them to one another where appropriate and, when given an example, for labeling the concept it illustrated.

The Process. The procedure was for the writers to write the items, for the items to be typed by the secretaries, and then to be reviewed by each of the reviewers in terms of difficulty and content coverage.

This procedure went on for the remainder of the week, with half-hour seminars everyday before lunch to discuss the procedure. In addition to writing the items, each writer was asked to write feedback to the student to increase the instructional value of the test taking experience.

On the experience that item writing can be a draining process, and that continued writing results in mental fatigue, and thus lower productivity, a couple of strategies were used. One strategy was to provide a "game room" where a soccer-board game and a carom game were available. The writers were also encouraged to leave the building for frisbee, or whatever recreation they could find. Also a trip to an exotic restaurant for chocolate pancakes was placed in the schedule, as was a group picnic.

Comments on the Process. During and at the end of the session, the item writing participants were asked to give their perceptions of the procedure. A summary follows:

The introduction to SUN was thought to be too lengthy (half hour on SUN, slightly less on Introductory Psychology). The discussion on item writing was viewed with mixed emotions. The psychology students thought it was useful, but that 45 minutes was too long.

The concept sheets were viewed as necessary, though there were many complaints that they were inadequate. It was felt some concepts were perhaps overemphasized, some underemphasized, and many were trivial. It would probably be a good idea if a means of weighting the concepts could be devised, in order to give the important concepts more emphasis.

A means of stating objectives more explicitly also needs to be developed, so it is clear to the writers when only definitions are desired, or when high-order questions are necessary. Many of the concepts demanded the writing of "fact" or "definition" items.

It seemed to be a good idea to let the writers choose the units on which to write items, and it was fortunate they came from a wide variety of psychological backgrounds. It was felt by the writers, and perceived by the reviewers, that providing feedback to the writers was counterproductive, too much time was then spent on modifying, and sometimes arguing, with the reviewer. However, some writers felt very strongly they should see what the reviewers said.

The game room was never used, though the frisbee was. The trip out for lunch was good for all, and another trip or two out would have been helpful.

The morning item writing sessions were felt to be most productive. Some thought a long morning with no writing in the afternoon might be a good idea. Another suggestion was that the morning be spent writing items, and the afternoon writing feedback and studying for the next day. We generally started about 8:30, broke for discussion at 11:45, then ate, and started again about 1:15, working until 5:00.

It was suggested, and generally agreed, that it would be best if the writers were paired together on groups of chapters, so they could work more efficiently.

Another point made was that the reviewers should be hired to come in after the first day or two of writing, and to remain an additional day or two after the writers completed their task.

During the week, six item writers wrote 520 items. Of these, about 120 were rejected by either content specialists or the measurement specialist. Though we desired feedback on half of the items, only about one fourth of the items had any adequate feedback. The item writers average about three items per hour, with quite a bit of variability in quantity and quality.

Conclusions about the Item Development Process. In general, we are quite satisfied with the items developed through the above processes. In terms of quality, it appears that while measurement specialists can provide some initial insight and direction to a group of content specialists, and while their expertise is necessary in the process of transforming the raw items into a test, the wisdom of their use as actual item writers is doubtful.

We are also well satisfied with the coverage of the material, due primarily to the rather detailed concept sheets which were provided to the writers. Such lists of very specific concepts, or objectives, seem to be indispensible to the item writing task.

In terms of guidance required by item writers, it appears if the writers are thoroughly familiar with the content and have been explicitely told what is needed, there is little need for a close monitoring of the actual item writing process. By the same token, pains must be taken to insure that the details of what is needed are in fact explicitly understood.

Clearly the single most important variable in terms of cost per item is travel and accomodations for writers. The implication of this is that when writers and consultants need to be hired, the Lincoln area should be searched before turning to out-of-state sources; or, alternatively where feasible, communication with such writers be via telephone and U.S. Mail.

Constructing Items Into Tests

Accounting I - Test Construction

Once the raw items have been developed, the process of selecting and organizing them into test form can begin.

The first step in this process is to sort the raw items according to the concepts they were designed to cover. Each item is labeled according to concept as it is written. The resident content specialist is then consulted for advice on how he would like the concepts to be weighted. Some concepts include a large amount of detail and must be sampled extensively, while other concepts may require only a single item. At the same time the content specialist advises the measurement person on such issues as preferred format, degree of variety desired, length of test, total number of items, etc.

The next step consists of the measurement specialist selecting 2-3 times as many items as are needed for each concept. This initial selection is done somewhat superficially, with obviously bad items being rejected, and with an attempt made to obtain a variety of form, style and detail of content within specific objectives.

The next step is also performed by the measurement person, who looks more closely at each item and each alternative, searching for inconsistencies, obviously wrong alternatives, give-away answers, grammatical problems and general item quality. The items surviving this editing process, still substantially more than are required for the actual test, are then given to the content specialist.

The content specialist performs essentially the same operations on the items, selecting the best item or items within each concept, the main difference being that his criteria are primarily related to content, not to psychometric considerations. The prime criterion of both the content person and the measurement specialist is characterized by the question, "Does a person who gets this item correct probably understand the concept?"

Usually the content person will decide there is a need for an additional item or two, in which case he will locate an appropriate question in the remaining pool. Additionally, he will certainly make a number of corrections and revisions of the chosen items as he sees fit. Once he feels he has a test with which he is satisfied, he returns it to the measurement specialist who once more checks it over. The test is then typed for administration to a prototype test group.

The prototype test group, in the case of Accounting I, consists of six persons who were paid to take the first course. They take each test first as a pre-test, and then as a post-test. They are asked to indicate any inconsistencies, misspellings, or any other errors they might notice. The frequencies of response to each alternative are examined for any suggestions of possible problems. Indicators of problems might include instances in which the majority of persons select a correct answer on a pretest, or the majority select a particular incorrect alternative on a post-test. Those items with suspicious response patterns are then thoroughly scrutinized and discussed by the content person, the course evaluator and the measurement person. Often corrections are made, but sometimes it is decided that there is nothing wrong with the item, and it is left as is.

Finally, the test is retyped on a stencil in final form and is handed over to the SUN delivery system for administration to learners, after which it will once again be analyzed, reviewed and revised as necessary.

Introductory Psychology - Test Construction

The test development process used for Introductory Psychology was essentially the same as that used in Accounting I. However, the review and editing procedure required a substantially greater degree of resources, since more tests and longer tests were required.

Each item was first examined in terms of the usual general requirements of clarity, grammar and consistent format. The items were then sorted according to unit arrangement and by concept within each unit. Items were then sampled within units according to a weighting formula determined by the content person with more items selected from one or another unit depending on its emphasis in the course. Enough items were sampled to allow for the construction of two tests for each of the five test periods--the real test and a parallel trial test. The trial test was to serve as practice in test taking, as a means of self-assessment and as an additional indication of the objectives of the course.

The First Drafts. An examination of the resulting drafts of the tests revealed some inadequacies in the sampling procedure. It appeared some concepts were over-sampled, and some under-sampled. Moreover, in some cases, it would appear to the learner, upon taking the trial test and then the real test, that she could determine (by deductive analysis) which specific concepts would be selected for the latter by examining the former. Such a cue to the student would certainly be misleading.

Part of the reason for the ineffective sampling was no doubt due to chance. In reality, particularly on the trial test, it is desirable to have a sampling of items that is more uniform than chance would provide, lest a duplication of a concept mislead the learner in terms of its relative importance. Also, we want to let the learner check herself on as many different concepts as possible in a trial test of given length.

Another reason for the ineffectiveness of the sampling procedures was the nature of the items. It was rare that any one item really covered only one concept. More often two or more concepts are covered by a single item. Because some concepts are more easily duplicated than others, they are likely to be over-sampled.

A final reason for the inadequacy of the sampling procedure was we simply did not have enough good items for all of the concepts. Though initially at least one item was written for each concept, by the time they were edited at various stages of the test development process, many items were dropped and some concepts were left uncovered.

Revision of the First Drafts. Our response to the sampling of items for the ten tests (five trial tests and five "real" tests) was based on intuition and common sense. If some concepts appeared to be over-sampled in a trial test, but not the real test, or vice versa, we shifted items from one test to the other. If the two tests looked too similar to each other in terms of specific concepts covered, we dropped items from one, and added different items. If it looked like there were some large holes in either test, with important concepts being neglected, we made plans to obtain additional items.

It also became obvious, as the ten tests took form, that the student feedback on the trial tests was in general inadequate. There were wide variations in style and form, primarily due to the variation in interest, skill and priorities of the item writers. Feedback for many of the items was limited to a brief page reference, while for others it was several sentences long.

In order to develop these rough drafts into polished tests, two writer-editors were rehired from the original team of item writers. One was the doctoral student-instructor who had shown himself to be sensitive to the task, and the other was the UNL professor who had proven to be a dedicated critiquer.

The doctoral student was given the drafts, and told to write, rewrite and edit them into polished form according to our specifications, and according to the comments of previous reviewers. He was asked to pay close attention to the feedback on both sets of items (those for the real tests as well as the trial tests) to insure the items were in fact covered in the text, and as a further check on their correctness. It was felt the feedback might eventually be used in conjunction with the real tests as well.

As the tests were edited and rewritten in this manner, they were forwarded to the UNL professor, who performed essentially the same task, only with particular attention being paid to coverage of content. A number of details of form and style were also corrected at this stage.

The next stage of test development was a review by the resident measurement specialist and the resident content specialist. After a final revision, the tests were stenciled and duplicated.

An Analysis of the Initial Test Results

Accounting I - Initial Test Results

The Mechanics of Administration. Sometime before the first students are expected to take the test, all of the students are contacted by mail and advised on the alternative methods of taking the test. The students have three options: They can come into the learning center at one of several prescribed times; they can call, write or visit a learning center to make an appointment to take the test at any time; or they can make arrangements through the learning center to take the test at a library in their county seat, the librarians of which have previously consented to participate.

The learners are allowed 90 minutes to finish the exam, though most finish in less than an hour. The tests are proctored by the librarians or the learning center staff. The learner may use no texts, notes or references. The answers to the multiple choice items are entered by the learner onto an IBM scoring sheet. The actual test is destroyed by the proctor, and the answer sheet is mailed in to the faculty office at SUN Central (Lincoln). The sheets are Xeroxed, with the original sent to Research and Evaluation, where they are analyzed as soon as there are enough to provide a quick statistical check on the first use of the test. The copies are corrected and graded by hand. Test scores and grades are sent to the students after having been determined by the faculty. The score sheet copies are filed for faculty use in follow-up phone calls, learning center visits and other student contacts.

How the Learners Fared. As of January 15, 1975, or about 60 days after the day a learner could reasonably be expected to take the first Accounting test, 180 or approximately 67% of the students taking Accounting I for credit, have actually taken the test. In keeping with SUN's philosophy of allowing students to proceed at their own pace, no determined effort is being made to systematically prod those students who are behind. However, it is also recognized that some students may need and even desire a little external prodding, and a general letter to all students was sent out, over the instructors signature, congratulating those students who attempted the first test, noting that the results weren't bad, and gently urging those who had not yet taken the exam not to put it off unless they "really felt it was necessary." Plans are being made to evaluate the situation again after the holidays, at which time more direct action may be considered.

The scores on the 28 item test have been analyzed in 3 batches. The mean score for the group of 56 students who took the test during the 10-day period after it was first offered was approximately 25, with a range 17 to 28.

The mean score of the 59 students who took the test in the following 15-day period was approximately 22, with a range of 11 to 28.

The mean score of the 65 students who have taken the test through January 15, 1975, is also approximately 22 with a range of 11 to 28. The overall mean for all 180 students is 22.5.

The course professor assigned grades according to the following schedule: 26 (92%) and above is A; 23 (82%) and above is a B; 19 (67%) and above is a C; 16 (57%) and above is a D; and below 16 is an F. For those electing the pass-no credit option, 16 is also the cut off point. In this first sample of 180 students, on the first test, there were 38 A's, 69 B's, 51 C's, 10 D's, and 12 no credits. The grading schedule was arrived at by the course professor, based on his own experience teaching Accounting I on the University of Nebraska-Lincoln campus. Further certification of the grading schedule is planned.

Item Statistics. The Accounting I tests are essentially Criterion Referenced Tests, that is, each item is directly linked to a domain of content specified in a statement of course objectives, and success is determined by attainment or non-attainment of objectives rather than by relative rank in a class. Therefore, classical test analysis statistics are not entirely appropriate. This is particularly true when a number of items are answered correctly by a very large proportion of the students, as was the case in this first exam.

Those items that were answered correctly by a very large majority of the students have been carefully re-examined by the measurement specialist and the course instructor to insure that such items have not been "give-aways", but truly reflect the attainment of the relevant objective. While about 1/3 of the items were answered correctly by over 90% of the students, no such "give-away" items have been found.

With such low score and item variability, classical discrimination indices such as the point-biserial correlation become meaningless. Discrimination was checked in two ways, however. First, the students were divided into groups of high scorers, medium scorers, and low scorers. Then, for each item, the percentage of each group answering it correctly was calculated. If the item did discriminate between students of various levels of ability, one would expect the higher level group to have the highest percentage correct on each individual item, and the middle group to have the second highest percent correct. In fact, this was the case with every item, excepting those items which were answered correctly by all members of the top two or of all three groups, and excepting a couple of statistically insignificant differences.

Another sort of discrimination index is the mean total score of all persons choosing the correct answer on any one item. If choosing the correct response to the item is positively related to ability, it should be true, in general, that the mean score of those persons choosing the correct answer for any one item should be higher than the mean score of persons choosing any other alternative for that item. This was universally the case, except for a couple of statistically insignificant differences.

Finally, a split-half reliability coefficient was calculated on each of the first two batches of tests, the prime difference between the two batches being the range or variation of the scores (the variance of the second test was three times that of the first). For the first batch, the reliability coefficient was .547, not at all unreasonable given the low variation in scores. The reliability coefficient of the second batch was .824, a very satisfactory coefficient in classical terms, even without a restricted range.

In fact, however, while the reliability coefficient does provide worthwhile information in a given context, the fallacy of focusing on such an indicator of test quality is well-illustrated here. The same test administered under almost identical conditions, to nominally identical populations, has two very different reliability coefficients--one quite mediocre and one quite satisfactory!

What is important is that each item directly tests competence in a given objective, and that all course objectives are adequately sampled. The above statistics help us ascertain whether or not this goal was achieved, but the reliance has been and must be on the careful process of linking items to objectives.

Introductory Psychology Test Results

The tests were administered in the same manner as the Accounting I tests, with the exception being the pre-distribution of the trial tests and accompanying feedback.

The trial tests looked essentially like the real tests, except the cover sheet explained how the trial test might be used and interpreted.

It was suggested the student study until he felt ready to take a test and then attempt the trial test under conditions similar to the real test (e.g., without the aid of books or study materials). After taking the trial test, it was recommended the learner should check answers and read the feedback to the questions she is uncertain about. Based on her experience with the trial test, she should then either study more, as suggested by the feedback, or attempt to take the real test.

The correct answers to the trial tests, each with feedback of two or three sentences of explanation and page references, were provided in a separate booklet that had been stapled on all four corners. The student was instructed to snip off three of the corners to separate the pages so she could check her answers and read the comments. This method was to encourage the learner to treat the trial test as a real test, to help insure that the scores would be comparable.

How the Learners Fared. As of December 9, 1974, 104 or 38% of the Introductory Psychology students had taken the first 48-item exam. The scores ranged from 11 to 45 correct, with a mean of 36. The grading scale, based on the course professor's judgment, his experience with similar courses, and the opinions and practices of other professors of introductory psychology courses, is as follows: 42 (88%) and above is an A, 38 (79%) and above is a B, 33 (69%) and above is a C, 27 (56%) and above is a D, and below 27 is "No-Credit". In this first sample of students there were 19 A's, 30 B's, 28 C's, 19 D's, and 8 No-Credits.

Item Statistics. Overall, the item statistics look fairly good. The total test had a Kuder-Richardson Formula #20 reliability coefficient of .831, which we consider to be quite adequate, given the reservations about the utility and validity of such statistics noted in the

Accounting I report. The indices of discrimination discussed in that report suggest that three items will need to be revised. Inspection by the course professor revealed the material for one of these items was not well-covered in the text, and the two other items were ambiguously written. The students who have already taken the test will have their scores adjusted accordingly.

The classical item statistics were more applicable to this test than they were to the Accounting I test, because of the greater variability of scores and the higher level of difficulty of the items. No items were answered correctly by all. Fifteen of the 48 items were answered correctly by more than 90% of the students, and another 15 were answered correctly by less than 70% of the group. While this is less than ideal if we really do want all of our students to know all of the concepts, it does allow us to use the classical indices with some appropriateness.

It is still too early to judge the worth of the trial tests. Informal feedback via the learning center coordinators is that the trial tests have been well-received and appreciated. We will be asking more questions about these trial tests in future evaluations.

Thoughts on the Validity of UMA/SUN's Tests

The question is often asked, "Are our tests valid?" which asks in technical jargon the simple-minded question "Do they mean anything?" Of course, the answer is "Yes, and No". The following general discussion reflects on experience both with Accounting I and Introductory Psychology.

If the purpose of our tests is to determine the extent to which the material thought important by the content specialists and/or the academic community is learned by the student, then the crucial concern is with content validity. This means, "Does the test adequately sample all of the material considered important?" In UMA/SUN, we deal with this question by listing all of the objectives of each course as it is produced, writing test items to cover each of these objectives and sampling these items to be as inclusive of content as possible. The items thus written are reviewed in terms of adequate coverage of content and general item quality by one or two outside content specialists, our resident content specialist and our measurement specialist. In addition, the sample of items chosen for the test is given a final check by the content specialist and, in the case of Accounting, are administered to a prototype sample of students as a further check. By this process, and to the extent the objectives are valid, we can feel confident in claiming our tests have content validity. That is, they are an adequate reflection of student competence in terms of the stated objectives.

There are some areas of concern in this process, however. The first is the implicit, sometimes explicit, statement of objectives by the content people. Before these objectives are incorporated into the test construction process, we have to make sure we truly want them to be UMA/SUN's objectives. If we do not want them to be UMA/SUN's objectives, then they should not be incorporated in the test and the test may not have content validity in terms of this sector of the academic community. On the other hand, if we want content validity in terms of content people's conception of what is important content (or anybody else's conception, for that matter), then we must make sure our final objectives reflect the views of these people. It should be noted this aspect of UMA/SUN's test construction so far has not been carefully controlled. In the case of Psychology, these objectives had to be contrived ad hoc, almost post production. This is risky business. In this case, we are assured of content validity in terms of the stated objectives but we must be aware of the fact that these objectives were derived from the course, not directly from the academic community, nor from a consideration of the purposes of UMA/SUN.

Probably the next most relevant type of validity with which UMA/SUN should be concerned is concurrent validity, that is, with the question "Does this test measure the same thing as some other test?" This is the empirical counterpart of content validity and similar cautions must be observed. The most important is a check to make sure we want out test to measure what the other test measures.

For those who define academic credibility as proof our students are capable of passing the same tests as other students, concurrent validity is important. A number of questions must be asked, however, such as "Are these other tests valid?" "Do they measure what we, or the academic community, feel is important?" "Is the content of the tests, we well as the courses for which the tests are designed, the same?" Given that these questions are answered affirmatively, then it makes some sense to administer UMA/SUN's test to these other students, or the other tests to our students, and note how well these two tests correlate. This could be done by paying students to take both exams, constructing tests composed of half of one test and half of the other, or by similar methods. An alternative to using an existing test designed for only one course would be to use a standardized test accepted by the academic community.

Presently we are minimizing the use of such procedures. We could have students in similar courses offered by other institutions take some of our tests. But it is probably true there are no other courses that stress what, and only what, UMA/SUN's present two courses stress. For this reason, the best information we could hope for is some gross indication of item difficulty and clarity. We have to rely heavily on our test development process, including the usual post hoc test analysis procedures that check internal consistency, to back up our claims of validity.

The type of validity tacitly assumed to be present by most educators, but is probably the most shakey, is construct validity. This is represented by the question, "Are we measuring what we think we are measuring" or "Is the meaning we give to the scores the meaning the scores should have?" Academicians are fond of assuring one another they know their tests don't measure what is really important, but yet, they generally continue to give grades based entirely on the test. We're not ready to suggest there is any real alternative to this, but particularly in an institution such as UMA/SUN, that stresses innovation in serving heretofore unserved needs of students, it would seem foolish to be tricked into looking at test scores, often traditional by design as the sole indicators of success or lack of it.

To summarize: The answer to the question "Are UMA/SUN's tests valid?" is "We try." We strive to develop objectives that adequately reflect the intent of the course, and have done a fair job in doing so. We create items reflecting these objectives under close supervision of content specialists. These items are sampled comprehensively to make up a test that is once more reviewed by content specialists, which is then prototype tested for obvious faults. This does a fair job of insuring content validity. We also have plans for trying other tests on our students, and our tests on other students. These plans are not yet solidified. This will be our test of concurrent validity. We should always be wary of construct validity.

Thoughts for the Future

Certain aspects of the learner-centered information system at UMA/S in general, seem to be in good order. The process of specifying objectives precisely and meaningfully to inform both the student and the test designer of what is being taught works well and should be continued. The content-expert team approach to item writing will be continued, probably with the initial sessions being held at UMA/SUN, but with much of the work being done at the team members' homes and offices. Parallel Accounting I tests are being constructed to allow students to retake a test, and other forms of information systems are being contemplated, including computer-managed and computer-assisted instruction. The parallel self-tests with annotated answers used in Introductory Psychology also appear to be useful. The test construction and review process seems to be in good shape, as is the test distribution/administration system. As the course progresses, we will remain alert to the possible need for diagnostic and remedial testing. We will continue to closely monitor the validity of our tests, primarily through a strong emphasis on referencing items to well-developed objectives and through expert review of the test development process at all stages. Finally, we will continue to ask the question "Whom are we serving and why?"

APPENDIX VI B

PLANNING FOR THE EXTERNAL EVALUATION OF UMA

TABLE OF CONTENTS

Page

INTRODUCTION 1

THE SUBJECT OF EVALUATION 3

Brief History of UMA and SUN 3

Philosophical Orientation and Future Plans 5

DESIGNING AN EVALUATION PLAN: BASIC CONSIDERATIONS 22

The Evaluation Setting 22

The Focus of External Evaluation 27

AN OUTLINE FOR EXTERNAL EVALUATION ACTIVITIES 30

NOTES 37

REFERENCES 38

PLANNING FOR THE EXTERNAL EVALUATION OF THE UNIVERSITY OF MID-AMERICA

Introduction

In the latter half of 1974, a new approach to postsecondary education moved out of the planning stage and into operation with its first course offerings. This approach is being developed by two, interrelated organizations, a regional corporation, the University of Mid-America (UMA), and its prototype delivery system, the State University of Nebraska (SUN). The existence of these organizations represents a major commitment by the federal government to serve the educational needs and interests of adults who cannot or will not avail themselves of existing continuing education opportunities.

Recently, UMA has been developing plans for the coming five years. By 1980, it intends to have a well-developed curriculum with operating delivery systems across several states providing open, flexible, and responsive educational services to its clientele.

The only way for UMA to find out if it achieves these goals is through extensive and vigorous evaluation of all aspects of the project. If UMA is to serve as a model solution for a wide range of adult education problems, then a large and diverse body of valid information has to be collected on its procedures, costs, benefits, and effectiveness. Much of this information will be used by UMA on a day-to-day basis to guide its activities. Much of it will also be needed by external audiences trying to decide whether to commit their resources to this kind of endeavor.

The University of Mid-America recognizes these evaluation requirements, and has already established its own in-house office for research and evaluation. However, it also recognizes the special advantages of information and judgments obtained through evaluations conducted by people free of commitment to UMA and its day-to-day trials and tribulations. This paper outlines the plans for an extensive external evaluation of UMA over the next five years.

This paper does not specify the exact questions to be answered, instruments to be used, and standards to be applied during an external evaluation. Such specificity could betray the utility of such an external evaluation. However, it is UMA's responsibility to provide parameters for external evaluators, in order that the information and judgments they develop will be useful both to UMA, and its various audiences. UMA is a unique organization and the evaluation possibilities are endless. It is hoped that this paper will be useful to external evaluators as they frame their own evaluation plans, and to a variety of other audiences as they try to clarify their questions about UMA. Grobman (1968, p. 13) effectively defends the rationale for the kind of plan presented here.

> There are far more evaluative questions than can be undertaken or than would pay off for a single curriculum. No single set of questions is suitable for all projects. Questions of concern to one project may be irrelevant or of minimal importance to another. Some curriculum developers have called in experts to provide a ready-made design for them. While suggestions from outsiders can be useful, having an outsider create questions important to the expert may not be important to the project. Some projects have reviewed the literature seeking an answer; others have visited similar projects. The experts, the literature search, and the visits may be relevant and useful, but they may not provide an instant, relevant design. If the evaluation is to be useful, each project must develop its own unique pattern, reflecting the interests and circumstances of the project and the clientele for whom the curriculum is planned.

Although a number of factors conspire to keep this plan from being extremely specific, the plan does answer some basic questions and provide overall directions for considering others. Stake (1969, p. 17) has outlined three questions that need to be answered in planning an evaluation.

1. What is the entity that is to be evaluated?
2. Whose standards will be used as reference marks?
3. What subsequent decisions can be anticipated?

The following discussion deals with these and related questions.

The first section of this paper describes both the subject for evaluation and its historical setting, through a review of the organization's goals and plans. Following that is a review of a number of issues effecting the overall shape and direction of external evaluation activities. The final section outlines the general progression of external evaluation activities over the five year period.

THE SUBJECT OF EVALUATION

The University of Mid-America has just completed a major review of its plans and procedures. The results of this review are presented in A Model Regional Open Learning System: Proposal to the National Institute of Education (October, 1974). This discussion draws heavily upon that document which should be consulted for further elaboration.

Brief History of UMA and SUN

> The Commission on Non-Traditional Study and the Newman Task Force Reports have clearly called to the country's attention the need for open learning.[1] In recent years, two facts have become abundantly clear: the American dream of equality has not extended to postsecondary education; and the orderly functioning of a truly open society demands that education reflect this openness, in access, in content, and in structure. The value of education has always been assumed in America; but in previous generations education was completed early in life, as preparation for the pursuit of a vocation. In a rapidly changing technological world, the old concept of an early period of education, followed perhaps by infrequent periods of "re-education" or "continuing education," is no longer sufficient; what is needed is a carefully planned system of recurrent lifelong learning, in which education becomes a continuous and regular part of everyday life. (UMA, 1974, pp. i-ii)

After an initial University of Nebraska study on the various issues reviewed above, the State University of Nebraska was founded (1971) as an attempt to develop a viable open learning system. The new project was supported by grants from the U. S. Office of Education and the National Center for Educational Technology.

> During this planning period, strategies for the design and delivery of mediated adult education were studied in depth, and experimental lesson modules were developed and tested. Three market and clientele surveys of the potential audience for open learning were commissioned. The resultant data uniformly showed that 7% of the adult population were sufficiently interested in postsecondary education to enroll and pay tuition. SUN subsequently received grants from the National Institute of Education to complete a series of specific work assignments directed toward completion of planning for a multiple-year regional open learning experiment. (UMA, 1974, p. iii).

One of the primary concerns of the planning period was the development of a delivery system capable of reaching a wide audience across a number of states in the region. It was decided that each participating state in the Mid-America region would have its own delivery system; SUN would be the prototype system. In this way, each state's delivery system could take advantage of local educational and communications resources. To operationalize this plan, the University of Mid-America was incorporated on a non-profit basis "specifically for the regional production and dissemination of open learning courseware, and coordination of development of delivery systems in at least the states of Missouri, Iowa, Kansas, and Nebraska (UMA, 1974, p. iii)." At the present time, Iowa State University, the University of Kansas, Kansas State University, the University of Missouri, and the University of Nebraska are participating members of UMA. SUN, as the Nebraska delivery system for UMA, is currently offering the first two courses. Both courses use a variety of media, including television broadcast over the state ETV network. Four learning centers have also been established across the state. The main administration and production staff for both UMA and SUN is located on the University of Nebraska's Lincoln campus.

In one sense, the external evaluators will have two separate entities for evaluation; UMA and the individual state delivery systems such as SUN. Of the two, SUN is the oldest and the only entity currently performing anything close to its eventual role. UMA is still in the planning stages, and its eventual characteristics depend in large measure on SUN's successes and failures. For some evaluation activities, both entities can be dealt with as one; but for others, careful distinctions should be made. The goals and scenarios of the five year plans provide further explanations in this area.

Philosophical Orientation and Future Plans

The following material provides a synopsis of UMA's philosophical orientation, overall goals, and operational plans. It represents a combination of excerpts from several areas of the 1974 proposal (cited earlier), rearranged here in a conceptual order from global to specific concerns.

The material is divided into five sections. The first three sections describe UMA's orientation to postsecondary education. In the first is a review of the rationale for an open learning approach to the delivery of educational services. This is followed by UMA's interpretation of the rationale in terms of its mission and open learning goals. Finally, these broad goals are operationally defined in the form of twelve characteristics for UMA's open learning model.

The remaining two sections review UMA's organizational plans. The first of these provides four scenarios for the expected status of various UMA elements in 1980; the delivery system, curriculum, course development, and consortium development. Finally, the last section describes those specific tasks UMA has set for itself in the next eighteen months.

It is hoped that the following quotations provide more than just a review of UMA's rhetoric. Although the utility of these statements for planning evaluations will vary widely, they do serve as some indication of the project's complexity. The external evaluator may have to develop more specific goal statements, but initially, these provide enough detail to identify the crucial issues behind a long range evaluation plan.

The Rationale for the Open Learning Approach

> Education generally has been viewed in this country as a social good deserving support from public funds. The benefits derived from education, especially postsecondary education, clearly include:
>
> 1. Self-development of individuals, so that they can lead fuller and richer lives and are able to grow emotionally and intellectually through understanding themselves and their world better;
> 2. Provision of skills which will enable persons to be employed at occupations requiring those skills, and thus contribute to their economic well-being as well as to that of society as a whole;
> 3. Expansion of the orderly processes of citizen participation in democratic government by insuring that the largest possible number of citizens have sufficient educational background to understand the processes of government, to be able to discuss intelligently matters of public policy, and to have the analytic and critical abilities to make informed judgments on public issues.
>
> The purpose of a postsecondary open learning system is to extend opportunity for these benefits to a wider group of people, including those for whom the rigidities of time, space, and curricular and course requirements in traditional institutions make learning infeasible or difficult, and those who are reluctant to enter the present system because of their age, educational, cultural, or socio-economic background; to provide these benefits through educational opportunities that present institutions and agencies do not provide; and to extend those benefits in new ways that may be more effective in terms of increasing the amount and quality of learning and the learner's sense of control over his learning, and in terms of individual and social cost. (UMA, 1974, pp. 12-13)

University of Mid-America Open Learning Goals

> The University of Mid-America (UMA) is being created to provide such an open learning system for persons in those states being served by member institutions of MASUA (Mid-America State Universities Association) who are unable or are reluctant to pursue their college-level educational goals in more traditional ways. UMA is a major experiment in American post-secondary education, whose mission can be broadly characterized as:

A. Creating and implementing a variety of learning approaches to provide high quality, relevant college level educational experiences primarily for people who heretofore have not had access to, or have not taken advantage of, college-level education

while

B. Carefully and systematically studying and documenting the effects and consequences of alternative ways of developing and providing these educational opportunities.

In UMA, open learning implies a commitment to increased accessibility to college-level education, and this accessibility means more than physical convenience -- it means a readiness to meet students where they are educationally, as well as geographically, and to provide careful academic counseling and assessment to try to help them meet their educational objectives. The goals of any open learning program ought to be to make learning available to all who want it, regardless of where they live or what hours they work. In addition, open learning should reduce the constraints on how people can learn by utilizing new educational techniques and methodologies and should provide new opportunities for interdisciplinary study.

The open learning goals of UMA may be stated as follows:

1. To direct its efforts for the benefit of a population heretofore unreached by existing post-secondary educational institutions, and to explore ways of delivering education to students hesitant to approach a traditional educational setting. The program will direct attention to those students who cannot or who are reluctant to attend a regular campus-based program. It is not the intent to seek out students who would otherwise enroll in existing programs in private or public colleges or universities.

2. To make available educational opportunities, to serve both of the following functions:

   A. To provide instruction for advancement toward a degree in traditional educational institutions. To that end, UMA will work closely with various colleges and universities to establish an acceptable curriculum for those students who wish ultimately to work toward a degree on a traditional campus.

   B. To satisfy the personal or professional interests of individuals to increase the quality of their life through education, without necessarily pursuing a degree. To that end, UMA will seek to create and establish, in concert with colleges and universities, offerings directed at contemporary issues and human problems, including some continuing professional education, that will appeal to a broad range of interests and needs. Such offerings would provide educational services without necessarily offering academic credit.

Appropriate faculty will participate in the development, review, and delivery of all UMA offerings.

3. To provide some new external degree programs in the future for those people who wish to obtain an undergraduate degree, but who are reluctant to or who cannot enroll in an existing educational institutions. Probably only a limited number of degree areas might be available through UMA.

4. To prepare, deliver, and coordinate interdisciplinary offerings in an attempt to create learning opportunities not always available in traditional institutions. Such courses could also be adopted by existing colleges and universities to augment their own on-campus programs.

5. To make available in each state an educational program that focuses on the learner, using both UMA-developed offerings and existing institutional resources to facilitate independent, individually tailored progress. In this connection, faculty roles in advising and individual counseling are especially important.

6. To explore and document a variety of approaches to the development and delivery of instruction, and to explore alternatives in content and form. Careful attention will be given to the effects of these various alternatives on learning, attitudes toward learning, cost, effectiveness, etc.

7. To maintain a program with a high level of academic quality with costs to students which are reasonable, and with financial aid available to those who need it.

UMA proposes to make major strides toward understanding the problems and potentials of extending the educational franchise, while providing an academically respectable, socially meaningful, and personally satisfying educational program for a new college-level education clientele. (UMA, 1974, Appendix B)

Characteristics of UMA's Open Learning Model

Derived from the UMA open learning program goals...., the particular postsecondary open learning model which UMA proposes will, therefore, have the following characteristics:

1. A policy of unrestricted admission, so that anyone who wishes to learn may do so, but with a primary target audience of adults who are interested in continuing their education, but who cannot or are reluctant to participate in campus-based programs;

2. An understanding of the needs and educational objectives of its learners, with a commitment to using that understandi

in the planning of learning opportunities made available through the system;

3. The willingness and ability to try to meet the learner where he or she is educationally, by recognizing individual differences in entry levels, and by affording the learner advice and counsel as to how best to use resources available throughout the system to achieve personal or professional goals. This includes a willingness to help the learner overcome any initial reluctance to attempt postsecondary education. This might be accomplished by helping the learner design learning programs which will maximize the possibility of success, while recognizing that not all potential learners will be able to achieve success in college-level work;

4. Provision of learning opportunities which enable the learner to learn at times and at places convenient to him, without prohibitive interference with job, family, or other obligations;

5. Reduction of constraints on how people can learn by utilizing a variety of educational media and materials, and personal contacts with faculty counselors, and other learners. Thus, persons can learn in ways which are most comfortable for them;

6. Provision of learning opportunities which allow the student flexibility in constructing his own learning sequence, so that UMA "courses" do not have single entry and exit points, nor single evaluation requirements, for all learners;

7. Provision of learning opportunities which are not dictated by the requirements of individual disciplines, but address themselves to subjects or problems that draw on whatever disciplinary expertise is appropriate;

8. The use of local and regional resources that already exist, in cooperation with present institutions, to expand the educational opportunities available to the learner in his own environment;

9. Reasonable costs, both to individuals and to society, so that the individual and societal benefits of learning become available to the target learners in this system at no economic penalty in comparison with the cost of attending traditional campuses;

10. An emphasis on learning rather than the meeting of arbitrary standards of time, courses, or curricular requirements and recognition of achievement of learning by students, however it occurs;

11. In courses bearing college credit, a level of academic quality (meaning the achievement expected of learners) no lower than that at a traditional university, so that work accomplished through the open learning system is fully accepted by other institutions;

12. More openness to self-examination, to research and evaluation than has heretofore been the case in postsecondary education; this openness includes a commitment to evaluation of learner achievement, to evaluation of effectiveness in meeting institutional and learner objectives, to incorporation of the results of these evaluations into policies and procedures, and to research that will contribute to generalizable knowledge about how the educational franchise can best be extended to all who wish it. (UMA, 1974, pp. 15-17)

UMA's Intended Status in 1980

The delivery system.

By 1980, statewide delivery systems will be fully operational in the UMA states, making available to interested learners a range of learning opportunities including UMA-developed courseware and local and regional resources in cooperation with existing institutions. Thus each system will expand the educational opportunities available to the learner in his own environment, as noted in the open learning characteristics listed in Chapter 1.

Each system will use a variety of mechanisms (for example, in Nebraska a network of learning centers is planned throughout the state), to provide services to learners necessary to realize the commitment to meet the learner where he or she is educationally. In such learning centers, learners will be able to receive advice and counsel as to how best to use all these learning opportunities to achieve personal or professional goals; they will have access to all UMA course materials so that they can review or work at an accelerated pace, thus being freed even further from time constraints; they will be helped to overcome any initial reluctance to attempt postsecondary education and will be assisted in the design of learning programs appropriate to their educational background level and abilities.

The learning centers will be staffed with persons sensitive to individual differences and knowledgeable about adult learning and about local educational resources. Thus, it will be necessary for UMA, by 1980, to have perfected means of selecting and training those staff members.

By 1980, the UMA office of Research and Evaluation, working with the individual state delivery systems, will have devised effective means of obtaining information about and feedback from learners. This information will be used in both the planning and modification of delivery system functions; and, as described in previous chapters, it will also be used by UMA in curricular planning, course development, and for the advancement of general knowledge about adult learning and social changes brought about by extension of the educational franchise.

> Fundamentally, from the point of view of the learner, the delivery system will by 1980 be a responsive, person-oriented way in which the learner can be helped to design his own path to a postsecondary educational goal. SUN and the other delivery systems in other UMA states will serve an important clearinghouse function linking learners with the resources and help they need to achieve their goals and objectives. While UMA-developed courses will certainly be important resources in this linkage, other resources will be sought and used as needed. (UMA, 1974, pp. 22-23)

Curriculum.

By 1980, UMA will have planned and developed curricula (i.e., patterns of educational opportunities for various target populations) that both recognize and honor the characteristics of an open learning system as described in Chapter 1. Those curricula will affirm that one of the major purposes of postsecondary education is to contribute to the self-development of individuals, so as to foster advancement of a society of people who are able to lead rich, full lives. The curricula will thus be particularly sensitive to the differing needs and hopes of a range of kinds of people. This attention to individual people and groups will not be simply rhetorical, but will be reflected in the courses and other educational experiences created, and in the way those experiences are made available to people. More importantly, learners will participate in curriculum development teams, and by contributing to the deliberations of curriculum planners.

While responding to the needs of individuals *as* individuals, the curricula will also recognize the complex interrelationships that constitute the society in which individuals live. Therefore, the curricula will contain experiences designed to increase the capacity of individuals to function as citizens in democratic government by giving them the investigative tools and by enhancing the curiosity that is so important to participation in matters of collective policy. One of the characteristics of UMA curricula will be a commitment to fostering a reflective quality among those who engage in the UMA program.

In addition, the patterns of educational opportunities created by 1980 will recognize that individuals must also develop skills that will enable them to be employed at a variety of kinds of occupations. UMA curricula will strike an appropriate balance between programs designed for specific career training or retraining, a liberal arts education, or personal enrichment. This balance will have been determined by experimental offerings designed for various target audiences to test demand, costs, effectiveness, and need for open learning.

At a more specific level: By 1980, UMA will have the experience necessary to more carefully define the kinds of people for whom the program is designed. UMA cannot be all things to all people. UMA's decisions as to which groups or individuals receive priority attention will have been refined on the basis of experience. Within five years, UMA will be able to describe comprehensively who has participated in UMA programs, and the extent to which UMA is meeting expectations. (This analysis is already under way with the specific data generated by enrollment in SUN's first two course deliveries.) These data will be used continuously to guide ongoing planning and development decisions.

By 1980, UMA will know a great deal more about how adults learn. Research on learning will have been conducted, and the results used to assist in curriculum planning decisions. UMA will have some insight into how curricula can be designed to be responsive to varied and changing learner needs and expectations.

In addition, by 1980 UMA will have assisted individual states to establish delivery systems that are most suitable for achieving the goals of UMA's curricular philosophy. The feedback from those delivery systems will, in turn, assist UMA in making course selections in line with the various curricula developed to address target audiences. (UMA, 1974, pp. 46-47)

Course development.

By 1980, UMA will have created or acquired a minimum of 55 courses, and will have made those courses available to individual state delivery systems. Courses developed or acquired by UMA will be distinguished by their commitment to flexible use by students, putting into practice the commitment to try to meet individual learner needs, interests, and expectations. In addition, these courses will be viewed as one major component of the overall resources available to learners in any given state. It will be recognized that the services provided by state delivery systems include more than the delivery of the courses created or acquired by UMA, but certainly those courses will be an important aspect of overall state educational environments.

By 1980, UMA will have catalogued and evaluated relevant open learning courseware existing throughout the world. The course evaluation and acquisition provedure developed in 1974 will have been thoroughly tested, to insure that UMA selects from existing course materials those most likely to contribute to the goals of UMA, of state delivery systems, and of individual learners. UMA will have determined the most cost-effective means of acquiring and adapting a variety of kinds of existing courseware, and will have made available both details of the acquisition and evaluation process and data concerning problems associated with adaptation of courses to other open learning systems or traditional institutions interested in acquiring and adapting courses, including courses developed by UMA.

The instructional development process utilized by UMA to create its own courses will have been thoroughly studied and refined by 1980. Alternative design and production approaches will have been tried, and guidelines developed as to the most effective means of

> creating various kinds of courses. For example, a thorough analysis of the course team structure will have been conducted over the five-year period, leading to generalizable observations as to the structure and internal management procedures that seem to work best.
>
> UMA will have experimented with alternative means of conducting formative evaluation in support of the course development efforts, and will have selected particular procedures that provide proven useful information to designers, producers, and other interested people. In addition, special attention will have been paid to the relative effectiveness of various kinds of media for various kinds of instructional purposes, and some media selection guidelines, based on both theory and practice, will have been developed.
>
> By 1980, UMA will have gathered considerable data on the extent to which UMA courses meet the needs, interests, and expectations of individual learners and target groups for which courses have been developed. These data will have been consistently used to aid in course development processes, and will have been made available to other interested agencies.
>
> Finally, UMA will have engaged systematically in a number of studies designed to shed light on the costs and effectiveness of various kinds of courses. As a result of these studies, better decisions about how to invest resources available for course development will be possible. Included in these studies is the difficult question of how to define differences among courses, and how to ascribe differing outcomes to different causes. These studies will in no way be completed by 1980, but initial generalizable cost-effectiveness data will have been generated. (UMA, 1974, pp. 67-69)

Consortium development.

> By 1980, the University of Mid-America (together with its associated state delivery systems) intends to be an operational entity which has the characteristics previously identified in Chapter 1. UMA will be one aspect of a model regional open learning system which has come to an understanding of the needs and objectives of its audience and which uses that understanding in the planning of curricula, in courseware development, and in the delivery systems operated by the states associated with UMA. By 1980, each of these associated delivery systems will have been made fully operational, using local and regional resources in cooperation with existing state institutions to expand the educational opportunities available to the learner in his own environment.
>
> Finally, by 1980, UMA and its delivery systems will be operating at a level of cost which is reasonable both to individuals and to society. Decisions based both on planning and on experience will have been made about the important questions of cost-effectiveness of the various components (delivery in all its forms, course develop-

> ment, etc.) of the system and adjustments made to improve the cost-effectiveness of the entire operation. A prime goal will be that the system is, by 1980, operationally viable without any continuing support from NIE.
>
> In summary, UMA will have reached a more precise definition of itself as an institution seeking to fulfill the mission outlined in Chapter 1. (UMA, 1974, pp. 99-100)

Tasks for Next Eighteen Months, 1975-1976

The following pages summarize a more detailed discussion presented in Chapter Six of UMA's 1974 proposal (pp. 128-173). This summary reviews the expected outcomes for tasks to be completed in the near future.

Delivery of educational opportunities.

A. Examine effectiveness of management and procedures in the open learning systems.

As a result of the formative nature of this work, changes should be made as needed in managerial procedures, resulting in refined operating procedures.

A summative evaluation of management procedures should be used in refining overall delivery system procedures, and should be instrumental in formulating operating procedures for delivery systems in other states.

B. Begin determination of the effectiveness of learning centers.

This is a task that will continue beyond the grant period. During the 18 months, UMA staff will have gathered initial data and analyzed it to examine such factors relevant to effectiveness as: the role of the learning center coordinator and support staff, the relation of learning centers to other institutions of higher education, the relation of course faculty to learning centers, the physical design of centers, and the role of educational information gathering and dissemination through the centers.

Based on this preliminary analysis, UMA staff and the Academic Council will refine the conception of a learning center and begin development of operational criteria for learning center operation.

Throughout this process, consultants and delivery system personnel will be involved.

The beginnings of generalizable data about learning center effectiveness will be available for other state delivery systems and other open learning programs.

C. Develop effective means for training faculty and learning center staff.

A detailed plan will have been formulated for developing and training open learning faculty and learning center staff. This plan will include such topics as: desired background, personality characteristics required, information and skills which must be acquired, and ways to achieve those goals through training (and selection).

Guidelines for developing such training programs will grow out of this work, to be made available to other UMA states for the establishment of their delivery systems.

D. Begin study of reasons for completion or non-completion of open learning courses and programs.

Tentative recommendations to delivery system staffs and course teams about attrition will have been developed. These may result in adjustments in admissions policy, delivery system operations, or course design.

An ongoing procedure for continuing this study and feedback on a permanent basis will have been established. Information and tentative conclusions gathered will have been made available, through UMA, to other state delivery systems.

E. Assist states associated with UMA to establish coordinated state delivery systems.

Guidelines will have been developed under the auspices of the UMA Academic Council for establishing open learning state delivery systems. Those guidelines will have been carefully reviewed and revised in light of experience in Nebraska and elsewhere, and will be made available through planned dissemination and by request to anyone interested in such guidelines. They will also serve to guide the planning of the UMA states.

Each UMA state will, by December, 1975, have established a comprehensive plan for the delivery of open learning educational services to residents of that state. The plan will identify available resources, establish delivery procedures, and include commitments from appropriate agencies, institutions, and/or individuals (e.g., educational television stations, newspapers, community colleges) to perform certain services relevant to that delivery system. Operational development of state systems will have begun by the end of 1975 with initial assistance from NIE funds.

F. Determine whom UMA should and does serve.

The primary outcome of this work will be an improved understanding of whom UMA is serving, and thus an opportunity for a more realistic picture of whom UMA might serve. These findings should be influential in determining curriculum direction and in course selection and delivery.

A second outcome of this work will be a body of data that will enable learning center coordinators to counsel more adequately their clientele.

Curriculum planning.

G. Develop conception of and plan UMA's ongoing curriculum.

UMA will develop a curricular philosophy as a result of the synthesis of the interests of learners and a normative determination of which needs will be and can be served and the ways in which those will be met. This philosophy will be an extension of the open learning goals described in Chapter 1 of this document.

This curricular philosophy will have at least two distinct but related parts:

a) It will specify criteria for the production and/or acquisition of courses. Such oft-used terms as "orientation to the learner," "individualized instruction," "modularization," "interdisciplinary," "problem-centered," and "academic quality" will be given more precise and operational definitions. It will specify what is meant by saying that the "value-implications" of a subject matter will be presented, and will detail the cognitive and non-cognitive goals for UMA.

b) The curricular philosophy will also contain criteria concerning how courses relate to one another and how they might be put into large groups (e.g., degrees). These criteria will include a discussion and decision as to whether UMA should have one curriculum or many curricula (or degrees); they will include a discussion and decision concerning the kinds of personal and social change to be sought as a result of learning experiences in UMA.

H. Begin study of adult learning as it relates to UMA's audience.

The guidelines developed will be used in UMA planning, as well as in course development efforts, to insure that what is known about adults and how they learn will be considered in all such decisions.

The adult learning guidelines will be available to interested parties.

Course development.

I. Produce and/or acquire 12 courses, with attention to design flexibility and refined procedures for the acquisition process.

Twelve courses will have been completed or will be in various stages of design or production, thus providing a full array of educational offerings for UMA delivery systems and for lease elsewhere.

Improved design techniques for modularizing courses to increase flexibility will have been developed and tested in use.

Refined procedures for the entire process of acquiring and adapting existing courseware will be available for use in UMA and as models for other open learning systems.

J. Determine the effectiveness of UMA courses.

Data will be available which are:

Useful in curriculum planning (including implications for the acquisition and selection of UMA courses), course development (including implications for courseware design, production, and refinement), and learning center administration (including implications for advising, counseling, and tutoring).

Useful in portraying course effectiveness to students and the UMA publics (taxpayers, institutions of higher and secondary education, board members, sponsors, etc.).

K. Begin explorations into the potential and limitations of various media roles and components within UMA courses.

Of primary importance will be the development of a beginning set of guidelines for media selection in UMA courses, insofar as affective measures are important considerations in media selection. These guidelines should be extremely useful in informing course development efforts.

Work done at UMA on this issue will be available for coordination with work done at Children's Television Workshop, and the British Open University, on the use of television in instruction.

L. Develop efficient ways to revise courses to prevent obsolescence and to reflect data on their effectiveness.

UMA will have developed a set of principles and procedures for course revision and suitable timelines for that revision process. These principles and procedures will contain cirteria covering the extent to which a course can be revised over a given period, the relation between the costs of revision and the value of revisions in the course, the relation of the revision of one course to that of another, and, most importantly, there will be an operational model concerning how the results of learner surveys, content consultant opinions, and the judgment of UMA staff can best be fed back into the course development process. This will involve an operational decision concerning the relation between the study of the value and effectiveness of courses and the course team.

Experience gained from application of this process during 1975-76 will be used to modify the process as necessary and to provide guidelines for other producers of open learning coursewares.

M. Continue examination of the instructional development process, including design, production, and evaluation, to improve effectiveness of the process.

A refined process (or multiple processes) of instructional development will be established for UMA. This will not be a rigid structure, but a set of guidelines, definitions of roles, and delineations of responsibility that can assist all UMA course teams.

Increased ongoing communication among those involved in course development in UMA will be established.

Generalizable data on what UMA has learned about salient aspects of instructional design of open learning courseware will be available.

N. Determine whether UMA will grant credit and/or degrees.

The primary outcome related to this work is that the UMA Board will, by June, 1976, decide whether UMA will grant credit for its courses, and will decide whether UMA itself will become a degree-granting institution. If the decision is affirmative, UMA will further decide what kind of credit structure it will use and what kinds of degrees it will seek to offer.

A secondary outcome resulting from this work will be the papers generated to stimulate the decision UMA makes. These papers will be made available to other interested parties.

O. Make decisions related to possible expansion of the consortium.

On the basis of the recommendations given to them, together with supporting documentation, the UMA Board will make a policy decision on expansion plans, and will begin during 1975-76 to implement the selected plan.

A secondary outcome will be a paper analyzing in detail alternative expansion plans, together with a discussion as to the pros and cons of each plan. The paper will be made available to interested parties.

P. Begin determination of social change brought about by UMA.

Policies relevant to the collection of certain kinds of data related to monitoring social change will be developed. These policies should influence the allocation of resources to the measurement of social impact.

A number of papers useful in interpreting data on social change will be developed for use within UMA planning circles and by interested parties outside UMA.

Q. Disseminate information about the model regional open learning system.

Generalizable knowledge about UMA and what it has discovered about open learning will be widely disseminated.

An important international open learning conference will take place under UMA sponsorship.

A national depository of information about open learning programs will be continued.

Effective means of publicizing UMA programs and services for prospective learners will be developed.

8. Conduct general administrative functions, including summative evaluation.

There are a variety of functions which are germane to several elements of the five-year plan of operation, and administrative functions which are critical to the operation of UMA. Among those functions are:

1. To continue examination and exploration of factors leading to economic self-sufficiency.
2. To establish procedures to insure organizational capacity to use the kinds of evaluative and experiential data suggested throughout this proposal.
3. To begin to relate course costs to course effectiveness.
4. To encourage lease of UMA courseware and determine effective procedures and policies related to leasing.
5. To provide opportunities and encouragement for professional staff development.
6. To provide leadership and management expertise for the entire operation.
7. To provide for policy recommendations to the UMA Board of Trustees about all the tasks identified in the five-year plan.
8. To arrange for an external summative evaluation of UMA.

This review of goals, scenarios and planning statements provides a rather inadequate picture of what UMA is, or intends to be. Not only do the goal statements reflect an ideal that may or may not be obtainable, they may also be misleading in their very simplicity. Whether or not the external evaluators press for further clarification of statements like these depends in part on their own pilosophical orientation towards their role as "objective" observers. However, the basic utility of finite criteria for program evaluation is also subject to criticism as Weiss and Rein (1972, p. 237) have pointed out.

> The difficulty underlying the development of criteria in terms of which a broad-aim program may be evaluated is not that the aims of the program are unformulated, although there may be many different interpretations of their meaning which themselves will change over time, but rather that they may be specified in many different ways, any of which would be considered desirable by program administrators. The administrators of a broad-aim program are apt not to know in advance exactly how the system change they hopt to achieve will manifest itself. Although they might be prevailed on to list in advance the kinds of changes they hope will result from their programs, they will nevertheless be opportunistic in their program management and will direct program energies to those system changes which appear to be within reach, whether or not these were included among their initial aims. The attempt to evaluate the success of broad-aim programs in terms of the change in narrowly defined criteria is not only difficult; it also misrepresents the actual aims of these programs.

One of the initial concerns for the external evaluator, and one of the concerns this paper cannot effectively address, is the determination of the role and utility of specific goals/criteria in the evaluation of UMA. However, the remainder of this paper describes some things UMA hopes to see in an external evaluation.

DESIGNING AN EVALUATION PLAN: BASIC CONSIDERATIONS

A number of considerations interact in the formation of an evaluation plan. Situational variables such as the growth of the organization, the information demands of various audiences, and the organization's attitude towards evaluation studies, all influence basic decisions on the conduct of evaluation activities. The following discussion reviews a variety of issues affecting UMA's evaluation plan.

The Evaluation Setting

The five year planning period bridges some major changes in UMA and SUN's organizational development. During the first several years, both organizations will still be engaged in redefining their objectives, setting up their staff, and altering various procedures as they receive initial indictions of what works. By the fourth and fifth years, the situation should have changed dramatically. At that time the organization should have begun to assume its final shape, and it will be possible to examine its impact. The scenarios reviewed earlier provide some means of contrasting the current organization with that of the fifth year.[2]

UMA's rapidly evolving character has a number of implications for evaluation. For example, it will be inappropriate and unrealistic to ask the same questions and expect the same evaluation activities over each of the five years. For example, in the fifth year it may be possible to arrive at some overall determination of UMA's cost-effectiveness in the development and delivery of educational services; before then, such an effort would be unrealistic.[3]

The problem of determining what kind of evaluation information is appropriately gathered at what point in the organization's development is quite complex. Obviously, UMA needs a variety of feedback in its formative or development stage. Equally obvious is the fact that summative judgments of the project's worth must be made, but if made too early may result in the demise of a useful idea. Meanwhile, each succeeding year means a larger commitment of resources and a very expensive wait for that evaluation information.

Ideally, UMA would like to have the best of both worlds. It values the help that rigorous formative evaluation activities can provide, both in the information they yield, and in the general process of questioning and discussion they engender. At the same time, UMA recognizes the valuable perspective gained through objective summative evaluation. Somehow, evaluation activities should provide both formative and summative data at appropriate stages of the project's development.

Evaluation Audiences and Information Needs

The broad evaluation expectations outlined above can be defined more clearly through an analysis of the information needs of the various audiences involved. Of course, it would take a major evaluation study just to determine the specific questions each audience will want answered over the planning period. However, it is possible to determine some general audience information requirements through an analysis of the relevance of basic evaluation questions to the various audiences. Brophy, Grotelueschen, and Gooler (undated, p. 3) have identified some of these basic questions and grouped them according to their basic informative purposes.

Evaluating for program planning

What program preferences and needs are held by various people and institutions?

What discrepancies exist between desired and actual status of various program elements?

What means are feasible for attaining desired goals?

What will happen if proposed goals are attained?

Who are the advocates and adversaries of the proposed program?

Evaluating for program improvement

Are strategies working as planned?

What unanticipated results are affecting program operation?

Are program issues being dealt with satisfactorily?

Is there sufficient program flexibility to meet new preferences or concerns?

Is the program content appropriate and effective?

Are internal/external relations hindering or enhancing program strategies?

Is the program as effective as similar programs?

Evaluating for program justification

Are the goals of the program justifiable as viewed by various people?

What was not attempted because of the existence of this program?

What exactly was done and what were the results?

Should the program be altered, expanded or disbanded?

What do advocates and adversaries want to know about the program?

This list is incomplete, but it does accurately describe the range of possible questions. UMA will need information from all three categories (planning, improvement, and justification) over the next five years.

The University of Mid-America is one of several audiences for evaluation information. For planning purposes, an "audience" is anyone who is involved in or affected by UMA's existence. Primarily this means UMA's staff, its students, and its funding agencies, particularly the National Institute for

Fig. 1. SAMPLE EVALUATIVE INFORMATION NEEDS OF VARIOUS AUDIENCES

Ratings:
2 - Information required by that audience
1 - Information useful to that audience

AUDIENCE TYPE

INFORMATION TYPE	Internal Audience								External Audience								
	Evaluation Staff (as audience)	Media Production Staff	Course Development Teams	Delivery System Administrators	UMA Administration	Learning Center Personnel	Course Instructors (Resident Faculty)	Students	Potential Students	Other Innovative Projects	Other Educational Institutions	Potential Distributors of UMA Courses	Potential UMA Members	Academic Content Experts	Educational Researchers and Theoreticians	Policy Makers and Public Officials	Funding Organizations
EVALUATING FOR PROGRAM PLANNING																	
What program preferences are held by whom?	2				2								1				
What discrepancies exist between desired and actual status program?	2				2								1			2	2
What means are feasible for attaining desired goals?				1	2					1	1		1		2		1
What will happen if proposed goals are obtained?	2	1	1	2	2	1		2	1		1		2		1	2	2
Who are the program's advocates and adversaries?	2				2				1		1	1	1			2	2
EVALUATING FOR PROGRAM IMPROVEMENT																	
Are strategies working as planned?	1	1	1	2	2	1		2	2	1	1		2				2
What unanticipated results are affecting the program?	1	1	2	2	2	1				1	1	1	1		1	1	2
Are program issues being dealt with?	1		1	1	2		1	1				1	1	1	1	1	1
Is there sufficient program flexibility?	1	1	2	2	2	2	1	1	1				2				
Is the program content appropriate and effective?	2	2	2	2	2	1	2	2	2	1	1	2	2	2	1	1	2
Are internal/external relations hampering program efforts?	1		1	2	2						1		1			1	1
Is the program more effective than comparable programs?	1	1	1	2	2	1	1	2	1	1	2	1	2		1	2	2
EVALUATING FOR PROGRAM JUSTIFICATION																	
Are the goals justifiable to various audiences?	1			2	2						1		1			2	2
What was not attempted because of this program's existence?	1			1	2					1	1		1			2	2
What exactly was done, and what were the results?	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	2	2
Should the program be altered, expanded, disbanded?	1	1	2	2	2	1	1	1	2	1	2	1	2			2	2
What do advocates and adversaries want to know?	2				2								2		1		2

Education. This last audience, NIE, is of primary importance as both the funder of the project and (directly or indirectly) its evaluation activities. Figure one compares the various audiences with the types of questions indicated by Brophy, et al. The diagram should not be interpreted as defining priorities for various kinds of information, but simply as an indication of whether a particular audience requires the information to complete its job, would find the information useful, or has no need for the particular data.

As complex as that diagram makes the evaluation task appear, it should be remembered that the diagram is really a simplification. For example, it does not address the time factor identified earlier: that certain information is appropriate and useful only at specific points in the life of the project. However, it should also be pointed out that not all of those questions are the responsibility of the external evaluator.

In-House and External Evaluation Responsibilities

Some basic distinctions can be drawn between the in-house and external evaluators as to who is responsible for providing which types of information. Each of these evaluator-types has certain advantages and disadvantages in different situations.

The external evaluator is apt to be more credible to an external audience. He is not personally or emotionally attached to the project, and therefore is assumed to be more objective than the in-house evaluator. Whether or not the external evaluator actually is more objective, he is certainly able to look at things from a fresh perspective, and his observations may be particularly valuable for that reason alone.

The value of the in-house evaluator lies in his closeness to project activities. Since he works with project staff on a daily basis, he is often more sensitive to finite changes, problems, and successes. Internal audiences may also feel that the in-house evaluator is more credible. In any event he is apt to be providing data on the more day-to-day aspects of the project.

In general, the distinction between the in-house and external evaluators is one of roles.[4] The in-house evaluator can be described as operating in the formative evaluation role. The goal of his evaluations is still the judgment of worth, but his activities are directed towards the development or improvement of specific project activities. On the other hand, the external evaluator has a summative role. It is his job to judge the worth of complete entities at a particular moment in time. The direction and scope of his activities is not directed by project development requirements, but primarily by the dictates of obtaining a complete and accurate picture of his subject.

This distinction oversimplifies the situation. Information and judgments from the external evaluator may be used in a formative sense to redirect project planning. At the same time, many services performed by the in-house evaluator may be summative or focused on a particular project aspect. However, the in-house evaluator is primarily responsible to UMA staff and administration, while the external evaluator has a more direct tie to the funder and other external audiences.

With certain qualifications, then, the external evaluator should act in a summative role to address those questions of primary importance to external audiences. The in-house evaluator should be seen in a formative role addressing questions of primary utility to the project staff. However, either evaluator should be free to use the other's efforts as input to his own decisions.[5]

The Focus of External Evaluation

The preceding discussions have identified a particular sphere of concerns for external evaluation. The next task is to define a set of evaluation guidelines which take into account the various considerations of audience needs.

organizational change, and appropriately timed measures. The solution seems to be a consideration of the five year evaluation period in terms of the intrinsic/pay-off distinction suggested by Scriven (1967, pp. 53-54).

> Two basically different approaches to the evaluation of a teaching instrument appear possible, and are often contrasted in the literature. If you want to evaluate a tool, say an axe, you might study the design of the bit, the weight distribution, the steel alloy used, the grade of hickory in the handle, etc., or you might just study the kind and speed of the cuts it makes in the hands of a good axeman. (In either case, the evaluation may be either summative or formative, for these are roles of evaluation, not procedures for doing evaluation.
>
> The first approach involves an appraisal of the instrument itself, in the analog this would involve evaluation of the content, goals, grading procedures, teacher attitude, etc. We shall call this kind of approach intrinsic evaluation. The criteria are usually not operationally formulated, and they refer to the instrument itself. The second approach proceeds via an examination of the effects of the teaching instrument on the pupil, and these alone, and it usually specifies these rather operationally. It involves an appraisal of the differences between pre- and post-tests, between experimental group tests and control group tests, etc., on a number of criterial parameters. We can call this pay-off evaluation.

In terms of the five year plan, the external evaluation should begin with an intrinsic focus, and during the third year, switch to pay-off concerns. Under the intrinsic focus, the evaluator will concentrate on such things as determining the worth of SUN as a model delivery system, or reviewing the congruence between stated goals and actual staff activities. As UMA and SUN get beyond their initial organizational difficulties and begin to resemble their intended functional status (during years four and five), the evaluation will shift to a pay-off focus and start looking at UMA's ability to facilitate change in adult attitudes, or impact on the activities of existing postsecondary institutions.

Under both foci, the evaluator remains in a summative role, protects his external perspective, and provides useful information to external audiences.

The difference is that under intrinsic evaluation, the evaluator focuses on the project itself. He analyzes its current procedures, plans, and activities in comparison to its own goals and standards on such things as effective administrative procedures, etc. Under pay-off evaluation, the evaluator focuses away from the internal workings of the project and onto selected areas of the project's environment; looking for identifiable outcomes and judging the overall worth or cost-effectiveness of obtaining them.

As an evaluation plan, this changing-focus technique solves several problems. First, it enables the activities of the external evaluator to be useful both to UMA and the external audiences. Particularly during the intrinsic focus, UMA can receive helpful planning information at a crucial stage in its development. At the same time, external audiences, such as NIE, are regularly informed of UMA's progress from an objective viewpoint. The second advantage of this approach is that it enables the project to undergo early external review without an unrealistic emphasis on the project's ability to produce premature results.

Finally, this approach enables the evaluator to "warm-up" to his task by putting the hardest judgments last. The determination of specific benefits resulting from postsecondary education is quite hard in any case, but is particularly hard given a non-traditional program with the goals and projected clientele of UMA. It is quite possible that the external evaluator may have to do extensive field work in the first few years in order to define workable criteria, standards, and indicators for judging UMA's impact. Most studies do not have this preparation time and fall subject to a methodological criticism defined by Provus (1972, p. 33).

> To evaluate something while at the same time we are deciding on a standard is like judging a defendant's guilt while we are in the process of gathering evidence. One day the defendant may appear to be guilty, the next day not, depending on what

> evidence we have found at the moment. Further, to judge a defendant without a set of rules about the rules of evidence and acceptable judicial procedure would be to expose the defendant to the whim of the value system of his judge, much like the witchcraft trials of New Salem.

Neither this, nor any other plan or system of evaluation, can really solve many of the problems the evaluator deals with in the course of his study. If this plan has any utility, that utility is derived from the fact that it describes what is expected of the evaluator while giving him the freedom to solve the problems in his own way. This discussion of the two-focus approach is as close as this plan comes to any methodological specifications. The next section is mainly an operational definition, or extended example, of how this approach might be applied.

AN OUTLINE FOR EXTERNAL EVALUATION ACTIVITIES

This section describes the basic activities and products of external evaluation over the five year planning period. It is only an outline of the evaluation, as much of what actually occurs will depend on variables such as who the evaluator is, the evalutor's relationship to UMA and NIE, and the funding level for both the project and the evaluation. Some assumptions have been made about these variables in order to develop this outline. These assumptions are reviewed below, followed by a chronological outline of evaluation activities in terms of the intrinsic and pay-off foci explained earlier.

The external evaluator's effectiveness depends in large part on who he is, and what his relations are with UMA and NIE during the study. It is assumed that the external evaluation will be primarily conducted by one individual or agency throughout the five year period. Other evaluators may be brought in for specific tasks, or to cross-check findings, but only through a long-term, continuous involvement can the evaluator provide UMA and NIE with the kind of sensitive, accurate, and comprehensive feedback needed.

A related assumption is that the evaluator will work in an atmosphere of mutual cooperation with both UMA and NIE. Both organizations must work together to obtain maximum benefit from the evaluation. First, they should arrive at a joint decision as to who will conduct the evaluation. Later, the evaluator will have to work with both in narrowing down the specific information needs to be addressed. Finally, as evaluation results are ready, there has to be a free exchange between all three parties in order to understand and apply the implications of those findings.[6]

With this as background, the evaluation activities can be outlined for each of the five years. As was discussed earlier, the demands of the situation call for an evaluation focus which changes from intrinsic to pay-off concerns. The first two years will be devoted to intrinsic issues, while the fourth and fifth years will be devoted to pay-off concerns. The third year is transitional, doing a little with both areas.

Years One and Two: Intrinsic Evaluation

Define Information Needs

As one of his first tasks, the evaluator must define the specific audiences and information needs he intends to serve. He should begin by developing an inventory of issues as identified by UMA and SUN personnel. This inventory should then be reviewed by NIE and representatives of various external audiences. A final determination of the specific information needs that will be met should be worked out in conference between NIE and UMA. The evaluator's own considerations for what is feasible and appropriate should play a large role in this determination. Although it is early, an attempt should be made to identify the primary issues for the whole five year period.

Determine the Scope of Intrinsic Evaluation

Working from the information needs defined above, the evaluator should develop a specific plan and set of goals for the intrinsic evaluation period. In her work on improving the utilization of evaluation data, Carol Weiss (1972, p. 323) has described some characteristics of studies that should also be used as the defining criteria of an effective intrinsic evaluation:

1. the explication of the theoretical premises underlying the program, and direction of the evaluation to analysis of these premises;
2. specification of the "process model" of the program -- the presumed sequence of linkages that lead from program input to outcome, and the tracking of the processes through which results are supposed to be obtained;
3. analysis of the effectiveness of components of the program, or alternative approaches, rather than all-or-nothing, go or no-go assessment of the total program.

A formal copy of the plan should be submitted to both UMA and NIE for their reactions.

Establish Data Records

The evaluator should define the kinds of base-line data he is apt to rely upon in the future, and should establish a standard, on-going system for gathering and recording those data. The external evaluator should work closely with the in-house evaluation staff on this activity.

Conduct the Evaluation

The evaluation should be conducted so as to achieve a working compromise between the time requirements of gathering and interpreting data, and the organizational demands for timely feedback. The external evaluator is not providing a data service for UMA. However, the nature of intrinsic concerns is such that the practical utility of the evaluation information is of considerable importance. The external evaluator should try to orient his activities towards providing UMA with specific conclusions at a useful point in time.

Reporting Results

The evaluator should make a formal report of his activities and findings twice each year. The full report should be given to both UMA and NIE, and then later to such external audiences as they see fit.

Year Three. Transition

Complete Intrinsic Evaluation

Any remaining work from the first two years should be completed and reported. The external evaluator should also complete a final report on the overall success of his efforts during this period. Specifically, he should indicate any changes that need to be made in the conduct of external evaluation activities during years four and five. A separate report should be prepared by NIE, UMA, and other evaluation audiences as to the utility of external evaluation findings they have received thus far.

Review Information Needs

The external evaluator should review with UMA and NIE the specific information needs identified earlier as concerns for pay-off evaluation. The crucial (and answerable) questions may have changed since they were originally identified. A new round of discussions may be needed between UMA, NIE, and other audiences in order to redefine these concerns.

Plan Any Additional Studies

NIE and UMA, in consultation with the external evaluator, should determine whether there is a need for multiple evaluations during the last two years. A decision to conduct multiple evaluations might be based on a need to obtain more than one viewpoint on the project's achievements. It might also be based on a desire to obtain a greater variety of evaluation findings than the current external evaluator can possibly provide. For example, it might be quite useful to bring in a goal-free evaluator so as to compare his findings with the heavily goal-based findings of the external evaluator.[7] Generally, there is a variety of benefits to be obtained from conducting several independent pay-off evaluations. Plans and procedures for any additional studies should be determined at this time.

Determine Scope of Pay-Off Evaluation

Working from the information needs defined above, the external evaluator should develop specific plans and goals for his efforts during the fourth and fifth years. A formal copy of these plans should be submitted to NIE and UMA. More detailed descriptions of what this plan should do are given below, along with a set of possible criteria for use in judging the project's overall worth.

Years Four and Five: Pay-Off Evaluation

Conduct the Evaluation

Completing an extensive pay-off evaluation requires a large commitment of time and resources. The last two years are exclusively devoted to this effort. In addition, it is assumed that the external evaluator will begin this effort with a useful set of data, instruments, and understandings derived from the last three year's activities.

Planning and conducting a complete pay-off evaluation is quite difficult; determination of worth is an elusive pursuit. Scriven (1974) has devoted considerable attention to defining the necessary components for judging the worth of educational products or projects. With slight modification, Scriven's conclusions serve as a good model for the range of judgments needed in a complete evaluation of UMA and its delivery systems.[8]

1. Need (Justification) Does the project fulfill a defensible need? want?
2. Market (Dissemination) Is the project capable of reaching an adequately large and appropriate clientele?
3. Performance--True Field Trials How well do the materials perform under a field test situation?
4. Performance--True Consumer How well do the materials perform after they are established in every day use?
5. Performance--Crucial Comparison How does the project compare to others where such a comparison is appropriate?
6. Performance--Long Term Does a follow-up study produce any new outcome data?
7. Performance--Side Effects Can a systematic independent evaluation determine any side-effects of project activities?
8. Performance--Process How does the process of material development, dissemination, and utilization function?
9. Performance--Causation Can any particular outcomes be specifically attributed to the project's existence?
10. Social significance To what extent can it be shown that the provision of an open learning, adult education, system is of benefit to the society?
11. Cost-effectiveness To what extent is the project cost-effective or under what conditions could it become cost effective?
12. Extended support To what extent will the project continue to revise its services and extend its benefits to new audiences?

These twelve questions describe an ideal range of evaluation concerns. UMA, NIE, or the external evaluator may wish to alter these questions in response to other concerns. However, the external evaluator should realize that his efforts may be judged in terms of these points.

Report Results

The evaluator should submit a formal report of his activities twice each year. An interim report or first draft of his findings should be made available during the last half of the fifth year. This will allow UMA or NIE to request any particular changes or clarifications before the final report is completed.[9] Full copies of all reports should go to both UMA and NIE, and later to other audiences that they feel appropriate.

Throughout the five year period, the evaluator should explain all of his findings in terms of the process and data used in their determination. Stake (1967) has specified a model for the full reporting of evaluative information that includes both descriptive and judgmental kinds of data. It is assumed that the external evaluator will provide this type of in-depth reporting.

This completes the outline of evaluation activities. Obviously, a more detailed plan will be needed before the study can actually begin. However, this outline does present the key points and issues that should be considered in all future plans.

A Starting Point

This paper represents a starting point in planning for an external evaluation of UMA and its related delivery systems. It began by describing the subject for evaluation in terms of its structure, history, goals, and future plans. This was followed by a review of expectations for the external evaluation, and a discussion of how the focus and conduct of the evaluation will influence the utility of its findings. Finally, the five year period was outlined in terms of basic activities or events with considerations for the completeness of specific evaluation products.

As a planning document, this paper has tried to present the key issues and some ideal solutions. As other evaluators and members of NIE and UMA react to these suggestions, the real plan will begin to emerge. This paper will have served its purpose if it provides a common set of useful understandings that future discussions can build upon.

NOTES

1. For a further discussion of the need for open learning systems, see the report by the Commission on Non-Traditional Study, Diversity by Design (1972); or the Carnegie Commission on Higher Education's Less Time, More Options: Education Beyond High School (1971).

2. SUN and the other state delivery systems are not always mentioned by name in this discussion. They are assumed to be an integral part of UMA unless otherwise indicated. There are some possible future evaluation questions which may require an exclusive focus on the delivery system alone, but such questions are not the concern of this paper.

3. While anything approaching a complete analysis of cost-effectiveness may be inappropriate for at least five years, it is the case that people will ask questions about this issue prior to that time. UMA will have to develop an early framework for answering such questions.

4. See Scriven (1967) for a full explanation of evaluation's roles and goals.

5. Throughout the paper is an assumption that the external evaluator is responsible for rendering his own judgments in addition to gathering and supplying information to other decision makers. Obviously, the evaluator's judgments must be substantiated and others may choose to accept or reject his conclusions. The point is that the external evaluator is more likely than other decision makers to have the perspective and information needed for objective judgments.

6. The external evaluator should work with, and report to both UMA and NIE. However, in case of conflict, NIE has to have sole, ultimate responsibility for the position.

7. For a complete discussion of the relative merits of goal-free and goal-based evaluation see Scriven (1972).

8. Scriven specifies thirteen criteria for evaluating educational products. One of these criteria, "statistical significance," has not been included since its emphasis was inappropriate for this situation.

9. At this late date, the external evaluator should not be compelled to alter his study. This interim review serves mainly to provide UMA and NIE with advance notice of any emerging problems with data completeness or interpretation. If such problems exist they may decide to conduct additional work.

REFERENCES

Brophy, K., Grotelueschen, A., & Gooler, D. A blueprint for program evaluation. Urbana, Ill.: University of Illinois, College of Education, undated.

Carnegie Commission on Higher Education. Less time, more options: Education beyond high school. New York: McGraw-Hill, 1971.

Commission on Non-Traditional Study. Diversity by Design. San Francisco: Jossey-Bass, 1973.

Gooler, D.D., & Richardson, P.L. A heuristic model for program evaluation of technical education in community colleges. Syracuse, N.Y.: Educational Policy Research Center, 1973. (Mimeographed)

Grobman, H. Evaluation activities of curriculum projects: A starting point. Chicago: Rand McNally, 1968.

Provus, M. Evaluation as public policy. In J. Weiss (Ed.), Curriculum Theory Network, 1972, (8/9), 33-45.

Scriven, M. The methodology of evaluation. In R. W. Tyler, R. M. Gagne, and M. Scriven (Eds.), Perspectives of curriculum evaluation. Chicago: Rand McNally, 1967.

Scriven, M. Prose and cons about goal-free evaluation. Evaluation Comment, 1972, 3(4), 1-4.

Scriven, M. Prologue: Standards for the evaluation of educational programs and products. In G. D. Borich (Ed.), Evaluating educational programs and products. Englewood Cliffs, N.J.: Educational Technology Publications, 1974.

Stake, R. E. The countenance of educational evaluation. Teachers College Record, 1967, 68(7), 43-60. (Reprinted in various collections including Weiss, 1972).

Stake, R. E. Language, rationality, and assessment. In W. H. Beatty (Ed.), Improving educational assessment: An inventory of measures of affective behavior. Washington, D.C.: National Education Association, 1969.

University of Mid-America. A model regional open learning system: Proposal to the National Institute of Education. Lincoln, Neb.: Author, 1974.

Weiss, C. H. Utilization of evaluation: Toward comparative study. In C. H. Weiss (Ed.), Evaluating action programs: Readings in social action and education. Boston: Allyn and Bacon, 1972.

Weiss, R. S., & Rein, M. The evaluation of broad-aim programs: Difficulties in experimental design and an alternate. In C. H. Weiss (Ed.), Evaluating action programs: Readings in social action and education. Boston: Allyn and Bacon, 1972.